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US EPA RECORDS CENTER REGION 5
420994

Clayton GROUP SERVICES

April 15, 2002

Mr. Steve Faryan
On-Scene Coordinator
Emergency Response Branch, Region V
USEPA
77 W. Jackson Boulevard
Chicago, IL 60604-3590

Clayton Project 65263.01.010

RE: Submittal of the Lockformer Removal Action Work Plan.

Dear Mr. Faryan:

Enclosed are six copies of Volume I of the revised Lockformer Work, which presents the Removal Action scope of work to be carried out under the Unilateral Administrative Order. The revised Field Sampling Plan, Quality Assurance Project Plan, and Standard Operating Procedures were submitted to you as Volume III on April 5, 2002 to expedite the review process and allow the fieldwork to begin as soon as reasonably possible. The boring logs, which comprised Volume II of the December 13, 2001 Lockformer Work Plan, have not changed and should be considered a working part of this document. To summarize, Volumes I and III of the December 13, 2001 Lockformer Work Plan should be discarded, and replaced such that the current complete Lockformer Work Plan consists of documents with the following dates:

Volume I – April 12, 2002
Volume II - December 13, 2001
Volume III – April 5, 2002

In reviewing Volumes II and III, some errors were determined to be present. To correct these errors, the following replacements are supplied with this cover letter:

- Boring Log CSB-1558 – replaces previous boring log in Volume II (December 13, 2001)
- Table 1 – replaces previous table in Volume III (April 5, 2002)
- Figure 16 – replaces previous figure in Volume III (April 5, 2002)
- Figure 22 – replaces previous figure in Volume III (April 5, 2002)

Attached to this cover letter is the "Road Map" of the comment responses we discussed in our meetings. Each comment has been duplicated in italics, and a response to the

comment is provided in bold print. The responses identify the location in the Lockformer Work Plan where information related to the comment can be found, or independently responds to the comment.

Section 7.0 of the Work Plan lays out an aggressive schedule to accomplish the removal action project tasks. The way it is currently laid out, the schedule is initiated with USEPA approval of the work plan on May 1, 2002. If that date is not achievable, we can discuss an alternative date, and Clayton can modify the project schedule.

It was necessary to modify the nature of the work at the south end of Area 3 from the scope of work previously discussed in meetings and comments. This is related to the practical limitations of performing bedrock well installation under the high-power electrical lines that exist there. As a result, we have modified the groundwater investigation scope of work at the south end of Area 3 but have proposed an alternative investigation equally suited to determining any contribution by Lockformer to offsite groundwater contamination in the glacial or bedrock aquifer.

Lockformer and Clayton wish to express our appreciation to you, Mr. Bolin, and the technical consultants who participated in the difficult technical discussions that have been undertaken to define the scope of work to be performed during the removal action. If you or any of your technical consultants have any questions regarding the nature of our submittal, I encourage you to contact me at your earliest convenience.

Sincerely,

Ronald B. St. John, PHG
Vice President
Clayton Group Services, Inc.

Attachments (2)
Enclosure (6)

Cc: H. Chinn (4)
D. Smith

Clayton GROUP SERVICES

18 January 2001

Steve Faryan, On-Scene Coordinator
United States Environmental Protection Agency
Emergency Response Branch
77 West Jackson Boulevard, HSE-5J
Chicago, Illinois 60604

TDD: S05-0105-004
DCN: 103-2A-ABFD

Re: Review of Lockformer Health and Safety Plan
Prepared by Clayton Group Services

Dear Mr. Faryan:

Roy F. Weston has completed the review of the Health and Safety Plan (HASP) prepared for the Removal Action at the Lockformer Company. Clayton Group Services, Inc. prepared the HASP. The review comments provided by WESTON do not constitute approval or disapproval of the HASP, but the review comments are provided for USEPA and Clayton's consideration to ensure that the requirements set forth in the 29 CFR 1910 and OSHA requirements are met. The review comments are summarized below.

Section 1.0 General Information and Scope of Work

There is no mention of the hazards of concern (chemical, biological, or physical). The General Information throughout this section describes only the site itself, not the hazards.

RESPONSE: Refer to Section 1.0.

Section 1.1 Scope of work

For each task identified in the bullet-listed item, provide a brief description of activities to be performed.

RESPONSE: Refer to Section 1.1.

Section 1.2 Site Location, History, and Current Conditions

In Section 1.2, there is no mention of the areas of concern. The reason for the removal action and the treatment of the soil is not presented in the HASP. Provide information for historical site assessments if previously performed. What regulatory actions have been taken by local, state, or federal authorities pertaining to the contamination onsite?

The HASP does not indicate what is being manufactured at the facility or if the manufacturing facility is still in operation. If the plant is still operational, what are the physical and chemical hazards that need to be considered when working near those areas?

RESPONSE: Refer to Section 1.2.

Section 1.3.1 Personnel

The personnel section does not include the specific subcontractors and safety requirements for their respective activities (drillers, well installers, electricians, and other required subcontractors).

Office Health and Safety Officer (OHSO) - Will the amendments to the safety plan be approved by the OHSO?

Site Health and Safety Officer (SHS0) - A daily tailgate meeting should be conducted by the SHSO. Does the SHSO have access to the field operation procedures (FOPs)? Are the FOPs available for review onsite? Who is responsible for the overall site safety – the OSHO or the project manager?

There is no mention of the alternate SHSO described previously.

RESPONSE: Refer to Section 1.3.1.

Section 1.3.2 OSHA Required Training and Medical Surveillance

There is no mention regarding Blood Borne Pathogen (BBP) training requirements.

RESPONSE: Refer to Section 1.3.2.

Section 1.4 General Guidelines

Under General Guidelines, there is no mention of the "buddy system" when conducting site activities. No personnel should be in the exclusion zone alone. The site should have a site entry and exit log to determine who is onsite at anytime and an exclusion zone entry and exit log in case of an emergency egress allowing determination of who is in the exclusion zone.

The heat and cold stresses need to reference each table.

There is no reference to alternative controls such as engineering controls and administrative controls. OSHA requires that alternative controls should be considered prior to using PPE.

There is no reference to record keeping and incidence information logs and required documentation for the site (OSHA 300 Logs).

RESPONSE: Refer to Section 1.4.

Section 2.0 Hazardous Evaluation

The hazardous evaluations risk assessment for each task is not broken down into chemical, physical, or biological categories. The level of risk is not evaluated in the safety plan. The type of hazard for the site is not specified in the plan (physiochemical, chemical toxicity, and biological).

RESPONSE: Refer to Section 2.0.

Section 2.6.1 Electrical Voltage

Electrical systems more than 600 volts, installations in a vault room, closet, or area surrounded by a wall, screen, or fence, access to which is controlled by lock or key or other approved means, are considered to be accessible to qualified personnel only (29CFR 1910.303(h)(2) 1997). A wall, screen, or fence less than 8 feet in height is not considered to prevent access unless it has other features that provide a degree of isolation equivalent to an 8-foot fence.

Will all heating elements rated at more than one ampere be properly marked? (29CFR 1910.303 (e). Does the ground near other facilities have the potential of heating or conducting a current in the area affecting the nearby facilities?

RESPONSE: Due to the scope of the revised HASP, this comment is no longer applicable.

Section 2.7.1 Lockout/Tagout Procedures

When tag-out systems are used, are employees trained in the following limitations of tags? [(29 CFR1910.147 (c)(7)(ii)(A-F), 1997)]

- *Tags are warning devices that do not provide physical restraint*
- *Tags are not to be removed without authorization, bypassed, ignored, or otherwise defeated.*
- *Tags must be legible and understandable*
- *Tags must be substantial enough to withstand the environmental conditions encountered.*
- *Tags may invoke a false sense of security, and their meaning needs to be understood.*
- *Tags must be securely attached to energy-isolating devices.*
- *Are live parts of electrical operating at 50 volts or greater guarded against accidental contact [29CFR1910.303(g)(2)(i)(A-D)]?*

RESPONSE: Refer to Section 2.6.

Section 3.1 Monitoring Frequency

Check the photoionization potential for the chemicals of concern. If the energy level is above 10.2 eV, the instrument may not detect the correct levels for that specific chemical compound.

RESPONSE: Refer to Section 3.1 and Table 3 of the HASP.

Section 3.2 Action Levels

For the action levels, the note under the table indicated this information was obtained from NIOSH Pocket Guide to Chemical Hazards. The information was not found in the NIOSH handbook. How were the action levels determined? For Vinyl Chloride, the action level will be five times to work in LEVEL C because the PEL/TWA for Vinyl Chloride is one part per million.

RESPONSE: Refer to Section 3.2.

Section 4.2 Safety Zones and Access Controls

The HASP had no indication that an exclusion zone entry and exit log was being generated for each day of site activities.

RESPONSE: Refer to Section 4.2.

Section 4.3 Personal Protective Equipment.

Depending on the concentration of the contaminates, neoprene gloves may not be the right gloves. When using neoprene as outer gloves, the breakthrough times are approximately 20 to 30 minutes per chemical, and it is unknown for vinyl chloride.

MSA had determined that vinyl chloride is a chemical compound that they list as compounds where level C cartridges should not be used. Check manufacturers for an updated list of chemical compounds that would not be appropriate for cartridge use.

RESPONSE: Refer to Section 4.3. Based on the low concentrations of vinyl chloride identified during previous investigations, it has not been included as a chemical of concern in this HASP.

Section 4.4 Additional Emergency and Safety Equipment

In this section, the HASP indicated only one fire extinguisher will be used. If several activities occur at the same time, more than one fire extinguisher may be required, and the information regarding the annual and monthly inspection of the fire extinguisher must be documented.

RESPONSE: Refer to Section 4.4.

Section 5.0 Contingency and Emergency Procedures

The route to the hospital should contain the exact distance and the estimated time to drive from the site to the hospital.

RESPONSE: Refer to Section 5.4 and Figure 3.

Section 5.2 Fire and Explosion

Due to potential for a fire and explosion, an emergency egress plan must be documented to determine the location where everyone must meet, if an emergency occurs onsite. An emergency horn signal or alarm system must be implemented to notify everyone onsite of an emergency. Once the alarm/horn is activated, everyone onsite must meet at a predetermined area outside the site. This is where the local authorities (police or fire departments) will also meet.

RESPONSE: Refer to Section 5.2.

Section 5.5 List of Emergency Telephone Numbers

The list does not include the number for the state emergency response (IEPA). Are additional contractors going to be onsite? If the contractor is undetermined, indicate what their responsibilities will be (e.g., drillers), and for the number put "To Be Determined."
If you have any questions, please call me at (847) 918-4051.

RESPONSE: Refer to Section 5.5.

Very truly yours,

Clayton GROUP SERVICES

ROY F. WESTON, Inc.

Ron Bugg
Safety Officer
Omprakash S. Patel
Senior Project Manager

OFFICE OF ATTORNEY GENERAL

MEMORANDUM

JIM RYAN
ATTORNEY GENERAL

TO : ***Faryan.Steven@epamail.epa.gov***
Stan.Komperda@epa.state.il.us

FROM : *Howard Chinn, Chief Engineer, EBN*

DATE : *January 18, 2002*

SUBJECT : ***Lockformer Work Plan***

CONFIDENTIAL-PRIVILEGED INFORMATION
NOT SUBJECT TO FOIA

Thanks for providing our office with a copy of the Lockformer Work Plan ("LWP") dated December 13, 2001, and for the opportunity to offer our comments on the LWP for your consideration.

It is our understanding that the LWP is the response of Lockformer to your Administrative Order dated October 4, 2001. It is questionable whether the LWP has complied with paragraph 3 of Article V of the Order, which delineates the response activities to be performed by Lockformer.

We believe the LWP has not met the requirement of 3(a) of the "work to be performed" which state in relevant part:

> *"The investigation shall be conducted to assess the known areas of contamination and to identify the outer limits of the contamination and shall include groundwater and soil."*

The investigation is incomplete because it did not identify the outer limits of the contamination at the Lockformer site and adjacent areas. (See objective A7 page 1-2.)

RESPONSE: The additional investigations and the scope of work identified in the April 15, 2002 LWP are the result of the USEPA, the IEPA, the IAG and their consultants comments responded to here, and the result of several individual meetings where the technical aspects of the investigations were discussed at length.

The investigation is incomplete because the LWP did not identify the use and purpose of the second set of pipe brackets on the west building wall near the former TCE fill pipes.

RESPONSE: The second set of brackets installed along the west side of the Lockformer building adjacent to the TCE tank fill and vent pipes were for a former anhydrous ammonia tank that was also installed on the roof.

It should be noted that an Agreed Order was entered on January 22, 2001, in DuPage County for Lockformer to investigate the nature and extent of the on and off site contamination. Lockformer has not met this requirement after the passing of a year.

RESPONSE: Lockformer disagrees with this statement. Lockformer carried out the investigations identified by the IEPA and the IAG aimed at determining the nature and extent of the on and off site investigations. In addition, Lockformer carried out investigations off site to the west of the Lockformer facility on the Northern Builders property, and performed additional investigations of the sewer lines in Area 3 without prompting by either the IEPA and the IAG.

It should also be noted here that the UAO is intended as an immediate removal action of the identified source material contributing to the contamination of the groundwater in the identified area. It is not intended as a final remedy and it is not anticipated that there will be an immediate and discernible improvement in the groundwater used by the area residents as their source of potable water.

RESPONSE: No such claims are made as part of the LWP.

Page 2-2, Vol. 1 refers to the petroleum tank but provided no further details or status of this tank.

RESPONSE: The petroleum tank referred serves the backup power generators at the facility and was shown to IEPA and IAG personnel during the original site visit and walk through. The nature of the investigations performed there was discussed and agreed to by the IEPA and IAG personnel.

Methylene Chloride was detected in all samples as shown in figure 2.1-3. Lockformer should explain the presence and source of this organic solvent adjacent to the sewer. It is recommended that a sewer system evaluation study (SSES) be conducted to assess the mechanical and hydraulic integrity of the sewer.

RESPONSE: It is Lockformer's opinion that the trace levels of methylene chloride determined to be present in samples on Figure 2.1-3. After the additional investigations that are identified in the LWP are completed, the usefulness of a SSES will be assessed.

The LWP indicated in Section 3.1 on page 3-1a proposed clean-up standard of 8.9 mg/kg based on TACO value for industrial-commercial inhalation rate of exposure to these soils. However, the clean-up standard should be based on meeting the objective of removal of the source material to eliminate a continuing source of contaminants to groundwater. The limiting factor may be the limits of the technology proposed for the remediation.

RESPONSE: The agreed RAO for the Removal Action is 8.9 mg/kg. Further consideration of more stringent cleanup standards in the remediation area based on migration of contaminants to groundwater will be discussed with the IEPA and the IAG personnel after submittal of the Lockformer Investigation Report to IEPA on May 10, 2002.

The LWP proposed a remediation plan utilizing an Electrical Resistive Heating (ERH) and Soil Vapor Extraction (SVE) to remediate the contaminated soils in area 1 and 2. The remediation of area 3 has not been determined and is contingent upon the completion of the additional

investigations needed to characterize the nature and extent of contamination below ground surface.

RESPONSE: No comment necessary.

The LWP indicated Lockformer has chosen ERH for remediation of the surficial clay till and fill. I believe the selection and decision regarding the technology is subject to the approval of the USEPA On-Scene Coordinator.

RESPONSE: Lockformer agrees with this comment.

We previously had asked Clayton to arrange a presentation by their contractor, Thermal Remediation Services, to brief us on the pros and cons of this technology.

RESPONSE: Clayton arranged for Mr. Greg Beyke of Thermal Remediation Services, Inc. to provide a demonstration to the USEPA, IEPA, the IAG, and their contractors on February 20, 2002.

Section 5.1.3 at page 5-6 of the LWP indicated the ERH technology was identified as the only effective, practical, and cost-effective approach for remediating the soils at this facility. This pronouncement may be a bit premature, considering the paucity of data in Area 3 and the need for additional investigations, and no other alternative technologies were evaluated in the LWP other than the SVE.

RESPONSE: In meetings with Lockformer, the EPA has defined that remediation efforts taking place under the Removal Action will address Areas 1 and 2 only. The IEPA will address further investigation and remediation of Area 3. The scope of work presented in the LWP to accomplish the Removal Action is not intended to be a feasibility study.

I believe Lockformer should follow the conventional procedures of a feasibility study under CERCLA, which considers all feasible technology.

RESPONSE: It is Lockformer's understanding that the EPA has requested that it perform a Removal Action at the Lockformer facility. The EPA has not requested that Lockformer perform a feasibility study to consider all feasible technologies prior to going forward with this Removal Action.

Prior to commencement of field construction activities at the site, Lockformer should install and operate a continuous recording climatological station at the site. This shall measure and record the following parameters:

1. *Wind speed and direction*
2. *Temperature*
3. *Barometric pressure*
4. *Precipitation*

RESPONSE: Lockformer will operate a climatological station during remediation efforts (see Section 4.5 of the LWP).

Section 5.2.3.8 of the LWP indicated the silencers will be specified to comply with Village noise ordinances. Lockformer should be aware of the need to comply with State of Illinois statutes and regulations governing the emission of noise found at Title VI of the Environmental Protection Act.

RESPONSE: See Section 4.3.2.7 of the LWP.

Lockformer indicated in Section 5.3.2.10 at page 5-29 that two GAC units will be placed in series. They should provide the design basis for operating the GAC units in series. Lockformer should consider the use of a continuous recording instrument to monitor the effluent from the discharge of the GAC unit.

RESPONSE: Per discussions in meetings between Lockformer representatives and the EPA, IEPA, the IAG, and their contractors, the carbon units will be operated in series (see Sections 4.2.3.9 and 4.2.3.10 of the LWP).

In Section 5.2.3.11, the LWP indicated the air treatment system will consist of two 2,000-lb GAC units placed in series. They need to provide the design basis for this design, as this does not appear to be the conventional configuration. Lockformer should provide a continuous emission monitor (CEM) with a recording chart to monitor the emissions from the discharge stack rather than the proposed plan. A suitable CEM may obviate the need for the manual sampling and laboratory analysis.

RESPONSE: A CEM system will be installed (see Section 4.5 of the LWP).

The LWP indicated in Section 5.4, "Air Monitoring," found at page 5-26, the procedures for sampling the VOC at the discharge stack. A CEM as mentioned above may obviate the need to do manual sampling and will provide real time data instead of a point in time. Lockformer should evaluate onsite regeneration of the GAC if steam is available at the facility.

RESPONSE: CEM will be performed during the Removal Action. Steam is not available at the Lockformer site. Spent carbon will either be disposed of or regenerated off site.

The LWP proposed an Ambient Air Sampling Program along the perimeter of its property, at Section 5.4.2 found at page 5-37, appears to be not very useful. An Ambient Air Monitoring Program must be predicated on an air dispersion model to determine the maximum ground level concentration of an air pollutant under a given set of conditions such as, effective stack height, wind speed, terrain, atmospheric stability, among others. Therein lies the need for the climatological station. This plan will provide Lockformer with the critical information to identify when the maximum ground level concentration may be expected at the residential areas, and when to operate the ambient air monitors.

RESPONSE: See Section 4.5 of the LWP.

In Section 5.5.3 found at page 5-39, the LWP indicated the emissions from the GAC treatment system will not exceed the limits in the air permit obtained from the IEPA. This permit limit may not be stringent enough to avoid a potential adverse impact to the ambient air quality at the residential area. It is recommended that Lockformer design the GAC control system to achieve a 99% removal efficiency of the inlet VOC content.

RESPONSE: Removal of volatiles by the GAC is expected to be in excess of 99%. See Section 4.2.3.10.

The confirmatory sampling data must demonstrate the source removal has been effective in eliminating the adverse impact to groundwater.

RESPONSE: The agreed RAO for the Removal Action is 8.9 mg/kg. Further consideration of more stringent cleanup standards in the remediation area based on migration of contaminants to groundwater will be discussed with the IEPA and the IAG personnel after submittal of the Lockformer Investigation Report to IEPA and the IAG on May 10, 2002.

Please advise if you have questions or comments.

cc: *Matthew Dunn*
RoseMarie Cazeau
Rebecca Burlingham
Kendra Pohn

Clayton GROUP SERVICES

January 23, 2002

Mr. Steve Faryan, On-Scene Coordinator
Emergency Response Branch, Region V
USEPA
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Refer to: 0430555004 – DuPage County
Lisle/Lockformer
Superfund/Technical Reports

Dear Mr. Faryan:

The Illinois Environmental Protection Agency (IEPA) has reviewed the Lockformer Work Plan received by our office on December 18, 2001 as generated for USEPA by Lockformer under the UAO. In addition to the comments generated by our consultant, Parsons Engineering, (which you have already received), please consider the following:

1. *Section 4.1.1 Page 4-2: An acetate sleeve for collection of soil samples may be preferable to a PVC sleeve. VOCs may be adsorbed into PVC.*

   RESPONSE: Agreed. See Section 1.5.1.1 of the QAPP/FSP.

2. *Section 4.3.2.2 Page 4-5: The drilling of bedrock wells is no more problematic than drilling the shallow wells was previously. The absence of DNAPL does not absolve Lockformer from sampling the bedrock below a sand unit that has been identified to contain TCE at levels 200 times higher than the MCL. Lockformer should install two bedrock wells in the locations identified in the Parsons Engineering comment letter.*

   RESPONSE: The installation of additional bedrock wells is discussed in Section 1.5.4 of the QAPP/FSP.

3. *Section 4.3.3 Page 4-6: It is premature to conduct a pump test until the vertical extent of contamination in the bedrock below Area 3 is identified.*

   RESPONSE: Agreed.

I look forward to discussing these and other comments during our conference call. Thanks for your consideration.

Sincerely,

Stanley F. Komperda, RPM
State Sites Unit
Remedial Project Management Section
Bureau of Land

Cc: Michelle Ryan, DLC
John Sherrill, SSU

Howard Chinn, IAGO-Chicago
Sasa Jazic, Parsons Engineering

Clayton GROUP SERVICES

April 15, 2002

Mr. Stan Komperda
Project Manager
Illinois Enviromental Protection Agency (IEPA)
Bureau of Land
1021 North Grand Avenue East
Springfield, Illinois 62794-9276

Re: Lockformer Work Plan
Lockformer Site
Lisle, DuPage County, Illinois

Dear Mr. Komperda:

We are enclosing our comments on the Lockformer Work Plan, prepared by Clayton Group Services, Inc., and submitted on December 13, 2001, for the Lockformer site located in Lisle, Illinois. These comments are based upon our independent review, and upon our joint discussions held at USEPA's offices on January 24, 2002.

GENERAL COMMENTS

1. *Section 1.0 should make a clear distinction between the Removal Action this Work Plan addresses, and any further remediation of soils and/or groundwater that may be required. The Work Plan should make clear that the remedial objectives discussed in this report are developed only for the Removal Action related to soils in Areas 1 and 2. Alternate remedial objectives would need to be developed for the final remediation of both soils and groundwater in all three areas at the Lockformer site.*

   RESPONSE: See Section 1.0.

2. *The discussion of delineation in Area 3 appears to focus only on the sewer line along the southern boundary of the site, and not full delineation of the contamination located on the remainder of Area 3. Specifically, contamination found in the retention basin (CSB-1573) and in the vicinity of MW-1113S must also be fully delineated.*

   RESPONSE: See Section 1.5.3 of the Field Sampling Plan in Volume III.

3. *To determine whether the bedrock aquifer is contaminated at the southern boundary of the Lockformer property, two bedrock monitoring wells should be installed. One well should be located between CSB-1562 and CSB-1563, and the other well should be located between CSB-1567 and CSB-1568. Each well should be installed 50 feet into competent bedrock. Each well should be packer-tested at 10-foot intervals, and sampled according to the protocols developed for previous bedrock well installations at the Lockformer site.*

   RESPONSE: See Section 1.5.4 of the Field Sampling Plan in Volume III. Due to drilling difficulties presented by the high power lines overhead at this location, these wells have been moved to installation locations on the south side of the Burlington Northern Railroad tracks.

4. *The extent of shallow zone contamination has not yet been determined to the south. Accordingly, three monitoring wells should be installed south of the Lockformer property and the Burlington Northern railroad, but north of St. Joseph Creek, along the access road running east-west on the Burlington Northern easement. These wells should each be installed to the top of bedrock, and be logged and sampled according to the protocols developed for the previous monitoring well installations at the Lockformer site.*

   RESPONSE: See Section 1.5.4 of the Field Sampling Plan in Volume III.

5. *After the delineation in Areas 1 and 2 is completed, a Confirmation Sampling Plan should be developed and submitted to USEPA. This plan should contain exact locations for all confirmation samples (both surficial clay and sand/gravel), and should identify how both the horizontal and vertical extent of contamination will be adequately addressed by the proposed locations. This plan will need to be approved by USEPA prior to beginning remedial activities.*

   RESPONSE: See Section 5.0 of Volume I.

6. *Because ERH does not appear to have any technical limitations in terms of reaching the Removal Action Remedial Objectives, the use of a statistical approach to confirmation sampling in the surficial clays is inappropriate. The Removal Action Remedial Objectives must be achieved at each confirmation sampling location. In the event ERH is unable to achieve these objectives within a reasonable time frame, Lockformer may propose alternative remedial approaches for achieving the required objectives.*

   RESPONSE: USEPA agreed to the use of a statistical approach based on a 95% confidence limit. The approach is described in Section 5.0 of the Work Plan.

7. *Because of the potential for more technical limitations with regard to the SVE system in the lower sand and gravel, statistical methods are considered appropriate for demonstrating compliance with the remedial objectives, as long as the data are distributed normally or log-normally. Because operation of a long-term SVE system is not cost-prohibitive, no provision should be made for shutting down the system prior to the objectives being achieved. In the event Lockformer believes the objectives will not be achieved within a reasonable time frame, Lockformer must either augment or modify the existing SVE system for increased efficiency, or propose alternative remedial approaches for achieving the required objectives.*

   RESPONSE: Agreed.

8. *Because the bulk of the remediated contaminants will be removed from the subsurface in the vapor phase at potentially very high concentrations, ambient air monitoring is a key concern. In the event of carbon breakthrough, the ERH system cannot be shut down immediately while the carbon is replaced. Accordingly, continuous monitoring of the influent and effluent of the carbon units is recommended. Dispersion modeling of the stack effluent(s) should also be performed to demonstrate that perimeter monitoring will be sufficient. The ambient air monitoring plan that has been submitted as part of this document is insufficient. The ambient air monitoring plan (AAMP) should address, at a minimum, the following:*

Development of Air Quality Standards (AQS)

- *Time-integrated AQS*
    - *Determination of compounds of concern based on sampling and other appropriate data*
    - *Development of AQS based on National Ambient Air Quality Standards (NAAQS) or risk-based standards. Risk-based standards may be developed based on accepted modeling techniques (such as USEPA's PRG Tables), site-specific data such as exposure duration and frequency, and toxicological criteria from accepted databases (such as the Integrated Risk Information System)*
- *Real-time AQS*
    - *Determination of parameters to be monitored – should be parameters that indicate a potential exceedance*

RESPONSE: See Section 4.5.2 of Volume I.

Specific Sampling and Analytical Procedures

- *What parameters will be monitored (based on AQS)*
    - *Real-time sampling*
    - *Time-integrated sampling*
- *What specific monitoring equipment will be used*
    - *Calibration frequency and procedures*
    - *Standard equipment operating procedures*
    - *Preventive maintenance*
    - *Anticipated duration and frequency of equipment shutdown (for maintenance, changing elements, etc.)*
- *Specific sample collection and custody procedures*
- *Specific analytical procedures (including custody, analytical methods, quality assurance/quality control)*
- *Will background or upwind samples be taken? When, how often, and for what parameters?*
- *How will wind direction be determined? Will meteorological monitoring take place?*
- *Under what circumstances would a monitoring station be moved?*
- *If background sampling is performed, where, when and how often will it be performed? What parameters will be monitored?*

RESPONSE: See Section 4.5.2 of Volume I.

Comparison of Sampling Data to AQS

- *How often will data be evaluated and compared against the AQS standards?*

RESPONSE: See Section 4.5.2 of Volume I.

Abatement Actions if Concentrations Exceed AQS

- *What action levels for each compound will trigger abatement?*
    - *Real-time sampling exceedances*
    - *Time-integrated sampling exceedances*
- *What specific actions will be taken to ensure that human health and the environment are not at risk?*
- *How will the efficacy of abatement actions be evaluated? If the abatement actions are not effective in a given period of time, will work be stopped?*
- *How will background levels be taken into account when implementing abatement actions?*

RESPONSE: See Section 4.5.2 of Volume I.

Quality Assurance (QA) measures

- *What QA objectives (precision, accuracy, completeness, representativeness, comparability) will be used to evaluate sampling data?*
- *What QA methods will be implemented to ensure quality of sampling, calibration and analytical procedures?*
- *What QA methods will be used for data validation and reporting?*
- *Will system audits be performed? How often and by whom?*
- *What corrective action will be taken if QA standards are not met?*

RESPONSE: A comprehensive ambient air monitoring program is described in Section 4.5.2 of the Work Plan. This program describes background sampling installation of a meterological station, monitoring indoor air quality, monitoring VOC concentrations near the plenum and in the residential neighborhood, dispersion modeling to estimate the maximum ambient concentrations. The Work Plan also states that, if EPA concludes that a site-specific risk-based ambient air quality study is required because of emissions from the remediation system, Lockformer will perform the study.

SPECIFIC COMMENTS

1. *Figure 2.1.5-G does not show a contour line for 0.06 mg/kg at depth of 40-50 feet. TCE was reported in soil borings SB-807 and SB-805 at 51 ppm and 22 ppm, respectively. Please describe how these concentrations will be addressed.*

   RESPONSE: The samples identified in this comment were taken from the upper portion of the lower till.

2. *Figure 2.1.9 – Please verify which concentration is correct for MW1114D. A TCE concentration for MW1114D of 1.3 ppm is shown on the Figure 2.1.9 and a concentration of 1.3 ppb was reported in Table 2.1.8.*

   RESPONSE: Figure 2.1.9 has been corrected and revised.

3. *Section 2 – The tables in the report should have highlighted values where remedial objectives have been exceeded.*

   RESPONSE: This comment has been implemented.

4. *Page 2-5, Section 2.3 – No regional groundwater map is presented. Please explain how the collected data was used.*

   RESPONSE: As discussed in meetings regarding the submission of the data summary, no interpretations were provided with the data. The Investigation Report to be submitted to IEPA and IAG on May 10, 2002 will include these figures.

5. *Page 4-2, 2nd Paragraph – How deep will the soil borings be installed?*

   RESPONSE: See Section 1.5.2 of the QAPP.

6. *Figure 4.1-1 – Area 1 will not be additionally delineated to the west along the second row from the north. Please explain the reason for this exception.*

   RESPONSE: Laboratory analytical results for soil samples collected from CSB-1206 and CCB-1207 will be used to define the extent of VOCs exceeding RAOs in this area.

7. *Page 4-4, 1st Paragraph – No soil boring to the east is shown on Figure 4.3-1.*

   RESPONSE: See Figure 22 of the QAPP.

8. *Page 4-6, 1st Paragraph – The pumping test should include a step test and a more detailed description for these activities to ensure the test is performed correctly.*

   RESPONSE: Based on the revised scope of work, no comment is necessary.

9. *Page 5-1, 2nd Paragraph – It is stated that ERH will be used to a depth of 30 feet. On page 5-7, first paragraph, it is stated that in Area 1, the electrodes will extend to 22.5 feet bgs and in Area 2 to 24 feet bgs. Please explain these differences.*

   RESPONSE: See Section 4.1. The final design will be made after investigations are complete.

10. *Page 5-4, 2nd Paragraph – The Confirmation Sampling Plan should include and describe the interim soil sampling effort.*

RESPONSE: The final confirmatory sampling plan will be submitted prior to implementation. See Section 5.0.

11. *Page 5-9, 5th Paragraph, and Figure 5.1-2 – How will shallow vents, extending 3 feet into the tight soil, assure that vapors are collected from a depth of 30 feet in the clay? Is it possible for steam to migrate laterally or move deeper and condense in colder regions, effectively spreading the contamination? Please add some language addressing the potential for unintended migration. Will confirmation samples be collected immediately outside the treatment area to demonstrate that such migration has not occurred?*

RESPONSE: See Section 4.1.4.4, page 4-12 and 4-13 and Section 4.1.4.6, page 4-14.

12. *Page 5-14, 1st Paragraph – Why is the treatment of Area 2 initiated only after completing the treatment at Area 1? The current schedule shows that remediation at Area 2 will start approximately 7 months after remediation at Area 1 starts.*

RESPONSE: See Section 4.1.6, page 4-19.

13. *Section 8, Schedule – After the SVE pilot test is completed, the detailed SVE design should be submitted to the USEPA for review and approval.*

RESPONSE: See Section 4.2.3.

14. *How will the SVE system address groundwater leakage into the sand and gravel unit?*

RESPONSE: This will be monitored during the pilot test, see Section 4.2.1.1.

15. *Page 5-20, 3rd Paragraph – 15-20-foot-long screens could be too long to move air evenly through all the affected soils. It is suggested that pilot testing be performed at discrete intervals and subsurface airflow modeling be used to ensure efficient operation.*

RESPONSE: Based on numerous past projects, this is not expected to be a problem. The pilot test in Section 4.2.2.1 will be capable of providing information for a proper design.

16. *Page 5-32, 3rd Paragraph – A removal rate of 0.5 pound per day is not meaningful, unless compared to historical trend data. It is suggested that a definition involving an asymptotic condition be used to determine when to operate in pulsing mode. In addition, the SVE system should not be pulsed during the operation of the ERH. Three weeks is too long to wait between pulses. Liquid-vapor equilibrium in the subsurface will be achieved much quicker; waiting longer will unnecessarily extend the total treatment time.*

RESPONSE: See Section 4.2.1.1, page 4-24, Section 4.2.5, page 4-39

17. *Section 8, Figure 1 – The sampling results for Area 1 and Area 2 should be submitted along with a Confirmation Sampling Plan to USEPA for review prior to beginning remedial activities. When will be the summary investigation document be provided to the IEPA?*

RESPONSE: See the schedule in Section 7.0 of Volume I.

18. *The role of the IEPA is not specifically outlined in the roles and responsibilities for the project and should be included.*

RESPONSE: Lockformer has entered into a UAO with USEPA and a consent decree with IEPA. These orders identify the roles and responsibilities of each agency.

We look forward to discussing these issues with you further. You may me at (630) 371-1800.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

Sasa Jazic
Project Engineer

Richard M. Frendt, P.E.
Technical Director

SJ:rmf
enclosure
File: 739452.01000

Clayton GROUP SERVICES

28 January 2002

Mr. Steve Faryan
On-scene Coordinator
United States Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

TDD: 0105-004
Document Control No.:103-3A-ABFM

Re: Review Comments on the Removal Action Work Plan
The Lockformer Company, Lisle, Illinois

Dear Mr. Faryan:

Roy F. Weston, Inc. (WESTON®), is pleased to submit the review comments on the Removal Action Work Plan (RAWP) for the above-referenced site prepared by Clayton Group Services, of Downer Grove, Illinois. The groundwater-related sections in the RAWP were not reviewed at this time as the review was focused for the soil (source removal) portion of the RAWP. The review comments for the document, provided below, are grouped into general comments and specific comments.

GENERAL COMMENTS

The selection of technology to treat the upper till by electric resistive heating (ERH) and the mass waste unit by soil vapor extraction (SVE) appears to be appropriate; however, selection of SVE to treat the degreaser pit area is questionable due to presence of clayey soil under degreaser pit area. Therefore, a pilot test is recommended to see if the SVE will be effective for soils associated with the degreaser pit area. In addition, a dual-phase SVE system was proposed for the mass waste unit in the previously submitted RAWP. The current RAWP has dropped the dual phase SVE system and has suggested to use the SVE system. It is recommended that a dual-phase system be implemented for remediation of the mass waste unit.

RESPONSE: See Section 4.2, page 4-21.

The upper portion of the lower till has significant level of contamination and no remediation plan for treating the upper portion of the lower till has been presented. The treatment of upper portion of the lower till should be performed under this removal action. A treatment technology should be selected for treatment of the upper portion of the lower till. In addition, a removal action cleanup level(s) for the lower till has not been addressed in the RAWP. Since the cleanup level for the overlying burden (mass waste unit) is 0.06 mg/kg and due to the proximity of the lower till to groundwater, the cleanup standard for the lower till is recommend to be 0.06 mg/kg (which is based on migration to groundwater).

During treatment by ERH, trichloroethene (TCE) could breakdown to cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride. If analytical results of confirmation samples show occurrence of TCE breakdown compounds at levels greater than the

historically reported levels, the treatment system will be operated until the soil concentrations are reduced below the historical levels.

RESPONSE: See Section 4.1, page 4-1.

Further investigation is planned to appropriately determine the area requiring remediation within Areas 1, 2, and 3. To facilitate implementation of the removal action within Areas 1 and 2 as soon as possible, WESTON recommends investigation of Areas 1 and 2 prior to Area 3.

Recommended locations for additional investigation have been marked on the figures provided in Attachment A. These areas should also be investigated, beginning with Areas 1 and 2.

Fill material was placed on Areas 2 and 3 and the historical drainage areas that are potentially contaminated are covered with this fill material. The thickness of the fill material should be determined using historical topographic maps and aerial photographs prior to any sampling associated with investigation of the historical drainage features.

There is no plan for confirmatory sampling for the degreaser pit area. A confirmatory sampling plan for the degreaser pit area should be included.

Final confirmatory sampling in the Areas 1 and 2 should be done only after the soil temperature has reached the baseline soil temperature. Therefore, a baseline soil temperature should be established prior to start of the ERH system.

The RAWP suggests to place the drill cuttings in the remediation area and for treatment. WESTON recommends that the drill cuttings be appropriately disposed off-site.

RESPONSE: See Section 4.6, page 4-59.

The SVE wells and the fence will be metallic; therefore, they should be constructed such that there is not electric conductance in these units. WESTON further recommends that the entire site be fenced to restrict trespasser access.

RESPONSE: See Section 4.1.4.7, page 4-17.

A Construction Quality Assurance Project Plan and Construction Quality Control Plan for the construction is not planned. To prevent delays in initiation of the removal action, WESTON recommends that substantive requirements of these plans be included in the RAWP in lieu of preparing separate plans.

RESPONSE: See Sections 4.1.8 and 4.2.8.

The Quality Assurance Project Plan (QAPP) included in the RAWP requires revision to ensure that the substantive requirements for the QAPP have been met. The QAPP guidance can be obtained from the On-scene Coordinator (OSC).

The air-monitoring plan for the project should be more aggressive due to the presence of a residential/commercial neighborhood surrounding the site. The ambient air inside the building should be rigorously monitored to ensure that the workers are not exposed to the toxic fumes from the treatment of soil.

RESPONSE: See Section 4.5, page 4-54.

A contingency plan has not been prepared and is necessary. Substantive requirements for the contingency plan should be included in the RAWP.

RESPONSE: See Sections 4.1.6, page 4-19 and 4.2.5, page 4-39.

The basis of several design and operational parameters is unclear (such as determination of breakthrough in the carbon units and the point at which te SVE system will be run on pulsed versus continuous operation). WESTON has requested additional information for numerous design and operational parameters within the specific comments below.

RESPONSE: See Section 4.2.3.10, page 4-33 and Section 4.2.5, page 4-39.

No design plans or specifications have been prepared for this project; therefore, they have not been reviewed.

SPECIFIC COMMENTS

SECTION 1 (BACKGROUND)

Subsection 1.1 (Introduction), Page 1-1

- *The scope of this work plan is to address remedial activities that will be performed in order to meet the removal action objectives set forth in the Unilateral Administrative Order (UAO) that is being enforced by the U.S. EPA Emergency Response Branch. To clarify this, the following insert should be included as the first paragraph of Subsection 1.1:*

> *"The scope of this work plan is to address the removal action that will be performed in order to meet the requirements set forth in the UAO that is being enforced by the U.S. EPA Emergency Response Branch. This LWP focuses on remediation of trichloroethene (TCE) in soil, which is considered to be a primary constituent of concern (COC) at the site; however, other volatile organic compounds (VOCs) have been detected at the site. Since the current remediation goals are designed to achieve requirements set forth by the U.S. EPA Emergency Response Branch, future remediation of soil and other environmental media may be required under other federal and/or state-lead remedial programs to address constituents and contaminant exposure pathways that are not addressed under the scope of this LWP."*

Subsection 1.2 (Objective), Page 1-2

1. *The first bullet under the objectives should read:*

> *"Perform soil investigations in Areas 1 and 2 to determine the extent of removal action required."*

2. *Change "The objectives of this LWP are as follows:" to read:*

"In order to meet the requirements of the UAO enforced by U.S. EPA Emergency Response Branch, the objectives of this LWP are as follow:"

3. *Removal activities within Areas 1 and 2 should focus on three soil units: the upper (surficial) clay till/fill unit; the "mass waste" unit underlying the surficial clay till/fill layer; and the upper portion of the lower clay/silt unit underlying the mass waste unit. Although the typical depths of the surface clay till/fill and mass waste units may be similar to those presented in bullet 1, removal activities should address geologic units rather than depth intervals that are likely only representative of these units in certain locations. To clarify the scope of removal action within Areas 1 and 2, bullet 1 should read:*

   "To present the method by which the upper clay till/fill, mass waste, and lower clay units will be remediated in Areas 1 and 2. The remedial approach for Area 3 will be determined upon completion of investigation of Area 3."

4. *After bullet 4, insert the following sentence:*

   "Future soil remediation may be required to address the remaining contamination under other federal and/or state-lead remedial programs."

RESPONSE: The essence of these comments are captured in the Introduction Section 1.0, the definition of the RAOs in Section 3.0, and the remedial approach to the lower till presented in Section 4.3.

Subsection 1.3.1 (Topography), Page 1-3

1. *Figure 1.3-3: This figure should be updated to indicate the retention basin located south of the Lockformer building.*

2. *Fourth line of paragraph 1: Insert the following text after "both parcels slope to the south/southwest.":*

   "The topography of Areas 2 and 3 was altered by placement of approximately 8 to 16 feet (ft) of fill material generated during construction along Ogden Avenue. Fill material depth is typically deepest along the western portion of Area 2 and apparently pinches out in Area 3. In addition, the site topography was also altered by placement of fill material in Area 1 south of the Lockformer building."

   Provide a historical topographical map of the site in the document that shows the site conditions prior to placement of the fill material. This map will aid in determining the depth where sampling is planned along the historical drainage ways (discussed in Subsection 4.4 and indicated on Figure 4.4-1). Upon evaluation of the former site topography, which is likely as represented in the site location map (Figure 1.3-1), the above insert may require revision to include a brief discussion of the historical topography of the site.

3. *Page 1-4: A discussion of the historical drainage features of the site should be included as the last paragraph in the subsection. The discussion should include locations of and flow directions within the historical drainage features depicted on Figure 4.4-1.*

RESPONSE: See Section 1.3.1.

Subsection 1.3.3 (Hydrogeology), Page 1-7

- *Potentiometric surface maps should be included in the report. The potentiometric surface maps should be prepared based on the most recently measured groundwater elevations within the monitoring wells screened in the mass waste unit and based on the monitoring wells screened in the bedrock. A discussion of the maps should also be included in this subsection.*

RESPONSE: Potentiometric surface maps will be provided in the May 10, 2002 Investigation Report submittal to IEPA.

Figures 1.3-5, -6, and -7

- *Use of hatching on the various lithographic units would allow for easier understanding of the site geology.*

RESPONSE: The figures have been modified.

SECTION 2 (DATA SUMMARY)

Figures 2.1-5G and -5H

1. *The extent of contamination (TCE > 0.06 mg/kg) associated with the numerous samples collected from unsaturated soil from the 40+ ft below ground surface (bgs) interval is not depicted on the figures (see table below under comment 3).*

2. *The boring log for CSB-1202 and page 2 of Table 2.1-4 do not indicate the sample collected from CSB-1202 at 45 to 47 ft bgs. Instead, the sample was reported collected from 48-50 ft bgs in the table and the boring log. Correct the information as appropriate.*

3. *The following samples were collected from unsaturated conditions and should be addressed under the scope of the removal action within the LWP (as further justified in the comments for Section 3):*

Sampling Location	Depth Interval, ft bgs	TCE Concentration, mg/kg	Sample Media Type
SB-805	46 – 48	22	Mass Waste/Lower Clay interface
MW-522	48 – 50	0.81	Mass Waste
SB-807	48 – 50	51	Mass Waste/Lower Clay interface
CSB-1210	42 – 44	0.816	Mass Waste
CSB-1204	42 – 44	1.1	Mass Waste
SB-602	45 – 47	13	Mass Waste/Lower Clay interface
CSB-1205	44 – 46	0.634	Mass Waste/Lower Clay interface

CSB-1205	46 - 48	0.624	Lower Clay
CSB-1206	44 - 46	6.24	Mass Waste
SB-801	45 - 47	8.2	Mass Waste
CSB-1207	44 - 46	20.1	Mass Waste
CSB-1207	50 - 52	0.115	Lower Clay Surface
SB-605	43 - 45	7.8	Mass Waste
CSB-1200	46 - 48	50.9	Mass Waste
CSB-1200	48 - 50	2.14	Mass Waste/Lower Clay interface
MW-1108S	46 - 48	34.9	Mass Waste/Lower Clay interface
CSB-1202	45 - 47	0.79	Mass Waste/Lower Clay interface
CSB-1202	56 - 58	0.472	Lower Clay
CSB-1208	44 - 46	0.911	Mass Waste/Lower Clay interface
MW-104	42 - 44	1.1	Mass Waste (Bedrock at 44.5ft)
CSB-1209	40 - 42	0.118	Mass Waste
SB-608	42 - 44	0.15	Lower Clay Surface
CSB-1201	52 - 54	42.3	Mass Waste/Lower Clay interface

Figure 2.2-1

- *The concentration units indicated on Figure 2.2-1 are mg/kg; however, Table 2.2-1 units are in micrograms per kilogram (ug/kg). Please revise as appropriate. In addition, significant deviation is noted between samples analyzed using field gas chromatography (GC) and those that were laboratory-analyzed. Although the field GC results seems to be conservative based on the values presented, the quality of both the laboratory and field GC data are questionable due to such high differences in the data.*

  For boring CSB-1558, the boring log indicates a sample was collected for VOC analysis from 2 to 4 ft bgs; however, the sample results have not been provided on Figure 2.2-1 nor in Table 2.2-1. In addition, Figure and Table 2.2-1 indicate a sample collected from 22 to 24 ft bgs; however, the boring log indicates the sample was collected from 20 to 22 ft bgs. Please revise as appropriate.

  RESPONSE: Clayton and EPA have agreed that the RAOs apply to the respective lithologic unit – and not depth intervals. The scope of the additional investigations to be undertaken in Areas 1 and 2 has also been agreed to. Future identification of areas that exceed RAOs will be based on lithology – not depth. Boring log CSB-1558 has been revised and is submitted with this revised work plan. In addition, the Field Sampling Plan (Section 1.5 of Volume III) uses lithologic delineation for future investigations.

SECTION 3 (REMEDIAL OBJECTIVES)

1. *General: The subsection title should be changed to "Removal Action Objectives."*

2. *Page 3-1: Replace last two sentences of first paragraph with the following insert:*

"The removal action objectives (RAOs) presented within this section are in accordance with the UAO and are based on cleanup standards negotiated with the U.S. EPA Removal Section for the TCE source removal activities addressed by this LWP. Additional RAOs may be developed in the future based on requirements of other federal and/or state remedial programs."

RESPONSE: See Section 3.0 of Volume I.

During treatment by ERH, TCE could breakdown to cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. If analytical results of confirmation samples show occurrence of TCE breakdown compounds at levels greater than the historically reported levels, the treatment system will be operated until the soil concentrations are reduced below the historical levels.

RESPONSE: See Section 4.1, page 4-1.

Subsection 3.1 (Surficial Silty Clay Glacial Till and Fill), Page 3-1

1. *Fourth line of first paragraph: Add "Tier 1" following "(TACO)."*

   RESPONSE: See Section 3.0 of Volume I.

2. *Insert as last paragraph in subsection:*

   "The RAO for surficial clay till/fill in Area 3 is 0.06 mg/kg, which is based on the IEPA TACO Tier 1 remediation objective for the Soil Component of the Groundwater Ingestion Exposure Route for Class I groundwater."

   RESPONSE: Lockformer does not agree with this comment. The Soil Component of the Groundwater Ingestion Exposure Route for Class I groundwater will be evaluated after further investigations in Area 3 are complete.

Subsection 3.2 (Mass Waste Sand and Gravel), Page 3-1

1. *Third line of first paragraph: Add "Tier 1" following "TACO."*

   RESPONSE: See Section 3.0 of Volume I.

2. *General: TCE is present at concentrations exceeding the TACO Tier 1 Remedial Objective for the Soil Component of the Groundwater Ingestion pathway at numerous locations in the lower clay/silt unit (underlying the mass waste unit). TCE distribution within the lower clay/silt unit appears to be such that concentrations are significantly higher near the interface between the mass waste and lower clay/silt units than in the central and lower portions of the lower clay/silt unit.*

   Based on discussions and past Clayton submittals, WESTON understands that Clayton's interpretation of the site hydrogeology is that precipitation infiltrates vertically through

the upper clay till/fill and mass waste units until it reaches the lower clay/silt unit, which serves as an aquitard thereby creating perched water conditions and lateral migration of groundwater. Although the lower clay/silt unit is reported to have relatively low permeability (thereby limiting the TCE migration potential), the elevated TCE concentrations (up to 51 mg/kg) present in the lower clay unit near the interface of the mass waste and lower clay units presents an imminent threat to groundwater. Consequently, WESTON believes that the removal action goal for the upper portion of the lower clay/silt unit should be 0.06 mg/kg. Further remediation of the lower clay unit (i.e., central and lower portions) may be required under other federal and/or state remedial programs. The RAWP should be revised to include removal action objective(s) and activities associated with the upper portion of the lower clay/silt unit.

RESPONSE: Lockformer disagrees with this comment. An evaluation of the migration potential from the lower till will be performed after the Investigation Report is submitted to the IEPA on May 10, 2002. However, Lockformer has proposed remedial technology evaluation that would, if successful, reduce the concentrations in both the lower till and groundwater in the glacial sediments.

2. *This subsection does not present RAOs for Area 3. Since the highly permeable mass waste unit is considerably closer to the ground surface or exposed in Area 3, this subsection should be revised to indicate that the RAO for soil in Area 3 is 0.06 mg/kg.*

RESPONSE: RAOs will be developed for Area 3 after further investigations there are completed.

SECTION 4.0 (FIELD SAMPLING PLAN)

General:

The FSP for this project indicates that soil borings will be performed using direct push technology. This boring and sampling technique is not addressed in any of the provided SOPs. An SOP should be prepared to detail the methods and procedures whereby soil borings will be advanced and soil and groundwater samples may be collected using direct push equipment. Then reference these new SOPs in the sampling plan.

RESPONSE: See Section 2.2.4 of SOP No. 200, included in Attachment A of the QAPP.

The FSP indicates that Method 5035 will be utilized for soil sampling; however, it is unclear whether Encore samplers will be utilized or field methanol preservation will be performed. In either case, the SOPs do not adequately address these sampling protocols.

RESPONSE: See Section 7.0 of the QAPP and Section 2.3.2 of SOP No. 910, included in Attachment A of the QAPP.

Appendix B is referenced throughout the sampling plan as containing the Standard Operating Procedures (SOPs); however, the SOPs are included as Appendix A. The document needs to be updated for this change.

RESPONSE: No comment necessary.

2. *First paragraph: Replace "Order" with "UAO."*

RESPONSE: See Section 1.5 of the QAPP.

3. *Page 4-1, paragraph following bullet 4: The extent of TCE exceeding the 0.06 mg/kg standard within the mass waste and upper portion of the lower clay unit in Areas 1 and 2 is not completely defined. Prior to remediation of the mass waste unit and upper portion of the lower clay unit, additional investigation should be performed. Replace "remediation by Electrical Resistive Heating (ERH)" with "removal action under the scope of this LWP."*

RESPONSE: See Section 1.5 of the QAPP.

Subsection 4.1 (Additional Soil Sampling in Area 1), Page 4-2

- *Replace the second sentence of first paragraph with the following:*

"Additional soil sampling will be conducted in Area 1 to define the extent of TCE concentrations within the surficial clay till/fill unit, mass waste unit, and the upper portion of the lower clay/silt unit that exceed the RAOs described in Section 3.0."

RESPONSE: See Section 1.5.1 of the QAPP.

Subsection 4.1.1 (Area 1 Soil Borings), Page 4-2

1. *Change subsection heading to read: "Area 1 Soil Borings in Surficial Clay Till/Fill."*

2. *First line of first paragraph: Insert after "Soil boring locations" the following:*

"to delineate the extent of TCE within the surficial clay till/fill exceeding a concentration of 8.9 mg/kg"

3. *Second paragraph:*

   a. *Previous borings advanced at the site using a direct-push technology have frequently terminated at approximately 16 ft bgs. In order to facilitate investigation of the entire depth of the surficial clay till (which typically extends to depths of 30 ft bgs), a heavy-duty direct-push rig will be required. If the heavy-duty direct-push rig cannot advance borings to the upper surface of the mass waste unit, a hollow-stem auger (HSA) technology should be used to complete the investigation. To prevent delays to the overall project schedule associated with drilling contractor arrangements, Clayton should consider using a HSA rig for the entire investigation.*

   To clarify the completion depth for borings in the surficial clay till/fill, WESTON recommends replacing "to the boring completion depth." in the fourth line to state "to the upper surface of the mass waste unit."

   b. *Fifth line: Replace "a portion of each sample" with "the portion of each 4-ft core recovered that exhibits the most visual or olfactory evidence of contamination."*

c. *10^{th} and 11^{th} lines: It will be difficult to track in the field where samples should be collected if one sample is to be collected every 10 ft when using 4-ft long cores. Consequently, WESTON recommends changing "10-foot" to "8-foot."*

NOTE: If a HSA/split-spoon sampler technique is implemented for the investigation, WESTON believes that one sample per 10 ft would be an appropriate frequency.

d. *11^{th} / 12^{th} lines: Add "for VOCs" following "will be selected for laboratory analysis."*

RESPONSE: See Section 1.5.1 of the QAPP.

4. *General*

a. *The sampling plan for the investigation of the surficial clay till/fill unit is based on arbitrarily drawn contours that represent the extent of soil containing TCE at concentrations above 8.9 mg/kg. The contour for the extent of contamination in Area 1 extends under the western portion of the building; however, there is no analytical data in this area to justify that TCE concentration indeed exceed 8.9 mg/kg under the building. Ease of implementation for the ERH technology could be greatly improved if electrodes are unnecessary under the western portion of the building.*

*Based on this rationale, WESTON recommends advancing three borings along the southwestern portion of the building interior (see attached **Figure 2.1-1 in Attachment A**) to verify that TCE concentrations exceed 8.9 mg/kg in this area. Based on a review of existing TCE distribution data and site geology, these borings should be advanced to a minimum depth of 20 ft bgs, under the same protocols used for the borings located outside of the building (e.g., one sample every 8 ft if using direct-push technique). A figure indicating the location of the additional borings, including unique identifiers for each of the proposed soil borings, should be prepared.*

RESPONSE: See Section 1.5.1 and Figure 19 of the QAPP.

b. *Additional sampling of the mass waste unit and upper portion of the lower clay unit is required to define the extent of contamination. WESTON recommends advancing additional borings as indicated on **Figure 2.1-5F of Attachment A** to confirm the extent of contamination. Sampling of the borings should be similar to the protocols (i.e, sampling frequency, etc.) for sampling of the surficial clay till/fill in the proposed ERH areas. Samples should be collected from the zone extending from the upper surface of the mass waste unit into the upper portion of the lower clay/silt unit. In lieu of drilling inside the building, horizontal drilling may help in achieving target depths under the Lockformer building. WESTON recommends that this sampling be described in a new subsection. In addition, a sampling location map should be prepared, including unique identifiers for each of the proposed soil borings.*

RESPONSE: See Section 1.5.1.2, Section 1.5.2.2, & Figure 21 of the QAPP.

c. *Significant data gaps exist associated with the soil underlying the degreaser pit area. In borings CSB-1319 and CSB-1325 the interval ranging from 4 to 14 ft bgs is uncharacterized, and in borings CSB-1316, CSB-1317, and CSB-1320 the interval ranging from 6 to 14 ft bgs is uncharacterized. Analytical results of borings CSB-1315 and CSB-1318 indicate there is potential for TCE migration within the upper soil unit underlying the building. Consequently, remedial effort in the degreaser pit area should address soil to a depth of approximately 14 ft bgs unless the vertical extent of soil containing >8.9 mg/kg TCE is defined through additional sampling.*

The lateral and vertical extent of soil containing TCE at concentrations exceeding 8.9 mg/kg is not completely defined west of boring CSB-1325 and to the southeast, south, and southwest of boring CSB-1315. Based on this, WESTON recommends advancing an additional 4 borings in the vicinity of the degreaser pit to confirm the extent of contamination. Recommended locations for these borings are indicated on ***Figure 2.2-1 of Attachment A****. Samples should be collected for VOC analysis every 4 ft to a minimum depth of 16 ft bgs. A figure indicating the location of the additional borings, including unique identifiers for each of the proposed soil borings, should be prepared.*

At least two soil samples must be collected under the degreaser pit.

RESPONSE: See Section 1.5.1.1 and Figure 20 of the QAPP.

d. *Due to evidence of historical fill placement in the southern portion of Area 1, three borings should be advanced along the southern boundary of Area 1 (as indicated in Figure 4.4-1 of Attachment A). These borings should be advanced into the upper portion of the lower clay/silt unit (unless groundwater is encountered prior). The easternmost boring should be advanced to bedrock to define geology in this area. Sampling of these borings should parallel sampling of the upper clay till/fill and mass waste units to define areas requiring treatment via ERH and SVE, respectively (e.g., one sample per 8 ft if using direct-push technique).*

RESPONSE: See Section 1.5.5 of the QAPP.

e. *Figure 4.1-1: The proposed borings should be labeled with unique identifiers. It is WESTON's understanding that the additional borings will be advanced outside of the existing grid pattern if TCE is identified at any of the peripheral boring locations (i.e., if the borings along the westernmost transect in Area 2 contain TCE at concentrations exceeding 8.9 mg/kg, additional samples will be collected north, south, and west of the existing transect). Please confirm that this is the intent.*

RESPONSE: See Section 1.5.1.1 and Figure 19 of the QAPP.

Subsection 4.2 (Additional Soil Sampling in Area 2), Page 4-3

- *Replace the second sentence of first paragraph with the following:*

> *"Additional soil sampling will be conducted in Area 2 to define the extent of TCE concentrations within the surficial clay till/fill unit, mass waste unit, and the upper portion of the lower clay/silt unit that exceed the RAOs described in Section 3.0."*

RESPONSE: See Section 1.5.2 of the QAPP.

Subsection 4.2.1 (Area 2 Soil Borings), Page 4-3

1. *Change subsection heading to read "Area 2 Soil Borings in Surficial Clay Till/Fill."*

2. *General: Additional sampling of the mass waste unit and upper portion of the lower clay unit is required to define the extent of contamination. WESTON recommends advancing additional borings as indicated on* ***Figure 2.1-5F of Attachment A*** *to confirm the extent of contamination. Sampling of the borings should be similar to the protocols (i.e, frequency, etc.) for sampling of the surficial clay till/fill in the proposed ERH areas. Samples should be collected from the zone extending from the upper surface of the mass waste unit into the upper portion of the lower clay/silt unit. WESTON recommends that this sampling be described in a new subsection. In addition, a sampling location map should be prepared, including unique identifiers for each of the proposed soil borings.*

RESPONSE: See Section 1.5.2.2 and Figure 22 of the QAPP.

Subsection 4.3 (Additional Soil and Groundwater Investigations in Area 3), Page 4-3

1. *Revise second sentence of first paragraph to read:*

> *"Investigations to date indicate that there may be VOC contamination associated with the sewer systems that run along the eastern and southern portions of Area 3."*

2. *Paragraph 1, lines 4 and 5: Replace "along the sanitary sewer line extending west" with "in Area 3."*

RESPONSE: See Section 1.5.3.1 and Section 1.5.3.2 of the QAPP.

Subsection 4.3.1 (Area 3 Soil Borings), Page 4-4

1. *Although the first sentence of the first paragraph indicates that sampling will occur to the east of the Lockformer facility, Figure 4.3-1 does not indicate sampling locations east of the facility. Figure 4.3-1 should be revised to include the proposed boring locations east of the facility and should also include unique location identifiers for all proposed borings and wells.*

RESPONSE: See Section 1.5.2.2 and Figure 22 of the QAPP.

2. *The FSP indicates that borings will be advanced using a direct-push technique; however, previous borings advanced in this area using direct-push technology failed to encounter*

saturated conditions in many borings. In addition, the vertical extent of contamination in many of these borings (CSB-1529, CSB-1558, CSB-1561, CSB-1562, CSB-1565, CSB-1568, and CSB-1572) was not determined. The vertical extent of contamination should be defined in these areas (except at CSB-1529, which appears to have been adequately delineated). Otherwise, it should be assumed that contamination extends to the groundwater elevation at approximately 30 ft bgs.

RESPONSE: No comment necessary.

3. *Since significant discrepancy between field GC and analytical laboratory results were observed during previous investigation along the sewer line, WESTON recommends use of a certified analytical laboratory in lieu of a field GC for this investigation.*

   RESPONSE: See Section 7.0 of the QAPP.

4. *Lateral migration of TCE may have occurred within the southern portion of Area 3. WESTON recommends collection of additional samples north and south of the existing line of borings to confirm that lateral migration has not occurred. Recommended boring locations are indicated on* ***Figure 4.3-1 of Attachment A****. The traverse of borings north of the sanitary sewer line would be advanced along or near the storm sewer, and the southern traverse of borings should be located between the railway and the creek. At least two of the southern borings should be advanced to bedrock to define the site geology and aid in evaluating contaminant migration and the effect of St. Joseph Creek on the site hydrogeology.*

   RESPONSE: See Section 1.5.3, Section 1.5.4 and Figure 22 of the QAPP.

5. *It is Clayton's assumption that the TCE contamination associated with the borings advanced along the sewer lines in Area 3 originated from the sewers. The hotspot at CSB-1529/1572 is apparently downgradient of the catch basin/manway near CSB-1315. Since the contamination at the CSB-1529/1572 hotspot (which is located from approximately 14 to 22 ft bgs) may have originated from the connections at this manway, WESTON recommends completing boring CSB-1528 to a minimum depth of 22 ft bgs.*

   RESPONSE: The subject area will be investigated as part of the activities discussed in Section 1.5.3.1 of the QAPP.

6. *The second paragraph, which describes groundwater sampling, was not reviewed.*

Subsections 4.3.2 and 4.3.3

These subsections were not reviewed.

Subsection 4.4 (Additional Surficial Drainage Way Sampling), Page 4-6

1. *The southwest portion of Area 2 has not been adequately characterized. An additional boring should be advanced along the western drainage feature to determine if TCE had historically migrated from the Lockformer building area. The recommended boring location would be approximately midpoint between MW-1105D and MW-521. The boring should be advanced into the upper portion of the lower clay/silt unit or until groundwater*

is encountered. Samples should be collected every 8 ft (direct push) or 10 ft (HSA/split-spoon sampler).

2. *Historically, a settling basin was present in the central portion of Area 3 (see Figure 4.4-1). The surface water drainage way sampling should include investigation of this area since it may have served as a sink for TCE released at the site. Recommended boring locations are based on a grid with traverses spaced at 50 ft, as indicated on the* ***attached Figure 4.4-1 in Attachment A****. Prior to the investigation, an evaluation to estimate the depth of fill placed in this area and to determine the historical elevation of the settling basin should be performed based on historical topographical maps. Since the mass waste unit may have historically been the surface soil in this area, thereby facilitating rapid vertical migration of contaminants, all borings should be advanced into the upper portion of the lower clay/silt unit.*

3. *In general, a 16-ft boring depth seems appropriate for borings located in Area 1 and offsite to the east, provided the vertical extent of contamination (if present) is delineated. Due to placement of fill on Areas 2 and 3, an evaluation of historical topographical maps to current site conditions should be performed to verify that a 16-ft boring depth is appropriate for the borings proposed in Areas 2 and 3.*

4. *Figure 4.4-1: All proposed borings should be labeled using unique identifiers.*

RESPONSE: See Section 1.5.5 and Figure 25 of the QAPP.

4.5.5 Sample Identification System Examples

Please provide an example identifier for duplicate samples.

RESPONSE: See Section 5.1 of the QAPP.

Subsection 4.8.2 (Management of Investigation-Derived Soils), Page 4-25

1. *All investigative-derived wastes, including soil cuttings, should be managed in accordance with U.S. EPA guidance document for investigation-derived waste.*

RESPONSE: See Section 1.5.6 of the QAPP.

Figure 4.6-1

This figure was not reviewed.

Subsection 4.9

General: This QAPP should follow the Region V Guidance for preparing the QAPP. The QAPP guidance should be obtained from the OSC and revised as necessary.

WESTON recommends that a U.S. EPA submit a performance evaluation sample to the Lockformer-selected laboratory to check the laboratory capabilities. A laboratory audit is also recommended.

RESPONSE: See the QAPP in Volume III of the LWP.

SECTION 5.0 (REMEDIAL TECHNOLOGY IMPLEMENATTION)

1. *Page 5-1: Insert as first sentences of section:*

   "This section describes remedial technologies that will be used in Areas 1 and 2 of the site. A remedial approach and design will be developed for Area 3 of the site upon completion of investigation activities."

   RESPONSE: See Section 4.1, page 4-1

2. *General: Due to the clayey soil present as well as the presence of structural fill material, WESTON believes that the proposed SVE will be least effective compared to other available technologies (i.e., excavation, ERH, etc.) for soil remediation in the degreaser pit area.*

   RESPONSE: See Section 4.7, page 4-61

Subsection 5.1 (Electrical Resistive Heating)

1. *Page 5-1, lines 3/4 of paragraph 1: As previously stated, the removal action should focus on specific geologic units rather than depth intervals that may not be representative of the locations of these units in all areas of the site. Based on this approach, "to a depth of 30 feet" should be replaced with "to remediate the surficial clay till/fill unit in Areas 1 and 2." Although a 30 ft depth appears to be appropriate based on a review of the boring logs within the contamination contours depicted on Figure 4.1-1, the depth for the electrode installation should be based on results of the proposed investigation of the surficial clay till/fill unit for these areas (as described in Subsections 4.1.1 and 4.2.1).*

   RESPONSE: See Section 4.1, page 4-1

2. *Page 5-1 and 5-2, paragraph 2, sentence 2: During implementation of ERH, the TCE in the soil will become highly mobile since it is in the vapor phase at elevated temperatures. To ensure that lateral migration of TCE outside of the area of influence of the ERH's SVE system has not occurred during remediation, the confirmation sampling program for the surficial clay till/fill unit should also include borings beyond the perimeter of the zone of influence of ERH's SVE system.*

   RESPONSE: See Section 4.2.3.10, page 4-36

   During treatment by ERH, TCE could breakdown to cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. If analytical results of confirmation samples show occurrence of TCE breakdown compounds at levels greater than the historically reported levels, the treatment system will be operated until the soil concentrations are reduced below the historical levels.

   RESPONSE: See Section 4.1, page 4-1

Subsection 5.1.1 (Electrical Resistive Heating Process)

1. *Page 5-3, first paragraph: Please provide documentation that the treatment interval using ERH extends 3 ft above and below the conductive depth interval of the electrodes. If documentation cannot be provided, electrodes should be installed such that the conductive depth interval includes the entire surficial clay fill/till unit to ensure effective treatment occurs in the upper and lower zones of the surficial clay till/fill.*

   RESPONSE: See Section 4.1.3, page 4-8

2. *Page 5-4, first bullet: How the "99% decrease at ambient temperatures" and 1 mg/L values were derived?*

   RESPONSE: See Section 4.1.1, page 4-4

3. *Page5-4, paragraph following first bullet on page: Post-remedial sampling should occur once the soil temperatures in Areas 1 and 2 return to their baseline conditions to account for potential TCE and/or TCE breakdown products concentration rebound due to condensation of TCE vapor remaining in the soil matrix.*

   RESPONSE: See Section 4.1.1, Page 4-4

Subsection 5.1.2 (Performance and Reliability of Technology)

1. *Page 5-5, first bullet: Although the process described may be valid, has it been established that anaerobic dechlorination is occurring at the site?*

2. *Page 5-5, third bullet: Please provide documentation that rebound has not occurred at any ERH site.*

   RESPONSE: See Section 4.1.3, page 4-8

3. *Page 5-5, fifth and sixth bullets: Please provide documentation that chlorinated VOC biodegradation by thermophilic bacteria is enhanced by ERH use.*

   RESPONSE: See Section 4.1.2, page 4-5

4. *pp 5-5, eighth bullet: Please provide documentation that hydrous pyrolysis rates are enhanced by using ERH.*

   RESPONSE: See Section 4.1.3, page 4-6

Subsection 5.1.3 (Feasibility of Implementation)

1. *First paragraph of subsection: What other technologies were evaluated?*

   RESPONSE: See Section 4.1.3, page 4-8

2. *Second paragraph of subsection: Please provide documentation that ERH has been accepted as the best available technology for in situ remediation of VOCs in soil and groundwater.*

   RESPONSE: See Section 4.1.3, page 4-8

3. *Third paragraph in subsection: Describe vinyl chloride formation at the AT&T site. Was a "No Further Remediation" letter obtained for the Lucent site?*

   RESPONSE: See Section 4.1.3, page 4-7

4. *General: This subsection indicates that ERH has been successfully implemented at sites in Illinois and that Clayton has worked on; however, none of the issues associated with implementability are discussed, nor are the corresponding actions that could be undertaken to overcome issues associated with implementability.*

   RESPONSE: See Section 4.1.3, page 4-8

Subsection 5.1.4 (Design and Technical Specifications)

1. *Page 7, first paragraph: In Subsection 5.1, Clayton states that ERH will be implemented to a depth of 30 ft bgs, and in Subsection 5.1.1, Clayton states that soil is heated 3 ft above and below the conductive interval. In the first paragraph of Subsection 5.1.4, Clayton states that the conductive interval will extend to 22.5 ft bgs in Area 1 and to 24 ft bgs in Area 2. Based on these depths, the lower zone of remediation will be 25.5 and 27 ft bgs in Areas 1 and 2, respectively (assuming a 3-ft zone of heating below the conductive interval is accurate). TCE was detected at 65.4 mg/kg in boring CSB-1201, and TCE concentrations detected in adjacent borings MW-1108S and MW-105 were 16.8 and 9.2 mg/kg (respectively), indicating that TCE concentrations likely exceed 8.9 mg/kg throughout the entire vertical profile of the surficial clay till/fill unit at this location. The electrode depths/conductive intervals should be such that the entire volume of soil containing TCE at concentrations exceeding 8.9 mg/kg within the surficial clay till/fill unit is heated in areas where ERH is implemented. The final electrode depths should be based on results of the proposed investigation of the surficial clay till/fill unit in Areas 1 and 2.*

   RESPONSE: See Section 4.1.4.1, page 4-9

2. *Page 5-8, first full paragraph: The condenser water will likely contain low levels of TCE; therefore, condenser water should not be reused for electrode wetting.*

   RESPONSE: See Section 4.2.3.9, page 4-32

3. *Page 5-8, third full paragraph: Define "TRS."*

   RESPONSE: Removed from text

4. *Page 5-8, last paragraph on page: Schematics should be provided indicating the design of a typical temperature monitoring probe (TMP). The proposed TMP locations do not appear to have adequate coverage of the treatment areas. WESTON recommends*

installation of additional probes at the locations indicated on ***Figure 5.1-1 of Attachment A.*** *To determine if areas outside the designed vapor recovery area for the ERH system are being heated (thereby increasing for VOC migration), additional TMPs may require installation outside of the ERH remediation area.*

RESPONSE: See Section 4.1.4.2, page 4-11

5. *Page 5-9, third paragraph: Monitoring thermocouples on a twice-a-week frequency is acceptable assuming the system is operating properly. More frequent monitoring may be required if system is not functioning as designed. Add also to the end of the paragraph the following insert:*

> *"System operation/configuration will be modified if thermocouple temperatures indicate that target temperatures are not attained."*

RESPONSE: See Section 4.1.4.2, page 4-11

5. *Page 5-9, fifth paragraph: Will the horizontal vapor recovery wells in Area 1 be placed on top of the asphalt or trenched into the underlying soil? Recovery may be ineffective if the vapor recovery wells are placed on top of the asphalt. Layout of the horizontal vapor recovery well system must be provided.*

RESPONSE: See Section 4.1.4.4, page 4-12

The zone of recovery for each vapor recovery well should equal approximately one-half the distance between the electrodes within the zone of remediation. Recovery wells may also be necessary along the perimeter of the remediation zone to capture any VOCs that may migrate laterally. In addition, WESTON recommends that vacuum monitoring points be installed between the electrodes to quantify the zone of vapor recovery.

RESPONSE: See Section 4.1.4.4, page 4-13

Since there is a potential for contaminants to migrate laterally through the surficial clay till/fill unit, WESTON recommends that soil gas monitoring points be established outside the effective conductive zone of the electrodes to ensure that VOCs are not migrating in vapor phase outside the capture zone of the vapor recovery wells. Baseline conditions (prior to implementation of ERH) will need to be established to ensure that vapor-phase VOC levels are not increased in areas outside the zone of recovery during the implementation of ERH. During remediation, the monitoring points should be checked on a regular basis using a PID supplemented with analytical sampling if conditions indicate potential migration of VOCs.

RESPONSE: See Section 4.1.4.6, page 4-14

Due to the proximity of the building to the remedial zone in Area 1, WESTON recommends daily health and safety monitoring of the ambient air within the building to ensure that workers are not subjected to elevated VOC levels that may occur in the building during ERH.

RESPONSE: See Section 4.5.1, page 4-54

If asphalt is used as the plenum in Area 1, the pavement should be checked for cracks and sealed to ensure VOCs do not escape. In addition, in other areas where plenums are used, the plenum should be anchored to ensure leakage does not occur around the edge of the cover. If more than one sheet of material is used for the plenum, the sheets should be appropriately welded together and tested. The plenum should be regularly inspected to ensure that holes do not form due to exposure to elevated temperatures or from abrasion of the tarp from movement caused by wind. Any such holes should be repaired upon identification.

RESPONSE: See Section 4.1.4.4, page 4-12

6. *Page 5-9, sixth paragraph: The first sentence of this paragraph indicates that electrodes will "terminate" at 10 ft bgs. Please verify that this reference means that the top of the conductive interval is located 10 ft bgs.*

RESPONSE: See Section 4.1.4.1, page 4-9

Comments above relating to active/passive recovery system, pressure and soil gas monitoring, and plenum installation/monitoring are also applicable to ERH performed in Area 2.

RESPONSE: See Section 4.1.4.4, page 4-12

7. *Page 5-10, second full paragraph: A header-piping layout should be provided.*

RESPONSE: See Section 4.1.5.2, page 4-18

8. *Page 5-10, third full paragraph: The entire area remediated by the ERH should be covered with a plenum to ensure that VOCs are not being emitted in the atmosphere without treatment.*

RESPONSE: See Section 4.1.4.4, page 4-12

9. *Page 5-11, bullet at top of page: Please describe and provide a diagram indicating how surface runoff will be directed away from the treatment areas.*

RESPONSE: See Section 4.1.4.5, page 4-13

10. *Page 5-12, first paragraph: How was the blower sized? Please provide rationale.*

RESPONSE: See Section 4.1.4.9, page 4-15

11. *Page 5-12, first paragraph: Previously, Clayton has stated that condenser water would be used for electrode wetting; however, here it states that the water will be discharged to the sanitary sewer. WESTON recommends that all condenser water be routed to the sanitary sewer for disposal after appropriate pre-treatment.*

RESPONSE: See Section 4.2.3.9, page 4-33

13. *Page 5-12, second paragraph: Please provide a description and supporting documentation on how "it is physically impossible for ERH current to flow to a distant energy sink."*

RESPONSE: See Attachment 4-A

14. *Page 5-12, third paragraph: What wattage is anticipated to be supplied to the field during active ERH (excluding downtime, etc.)?*

RESPONSE: See Section 4.1.4.1, page 4-10

Subsection 5.1.5 (System Installation)

1. *Page 5-13, first paragraph: All soil cuttings should be appropriately drummed and disposed off-site.*

RESPONSE: See Section 4.6

Please describe the drilling approach that will be used to install borings along the sloped portion of the site near the Area 1/2 boundary. Will benching be required? If so, the soil removed should be characterized for disposal.

RESPONSE: See Section 4.1.4.1, page 4-9

2. *General: An overall site layout map should be provided. The map should show locations for all major features such as support zones, piping, wiring, blower(s), power supply, etc. In addition, figures or technical drawings indicating the plenum, piping, and wiring designs should be supplied.*

RESPONSE: See Section 4.1.5.2, page 4-18

No discussion is provided regarding removal of the system, which should be properly abandoned such that subsurface conduits are not created.

RESPONSE: See Section 4.1.5.4, page 4-18

3. *Page 5-13, third and fourth paragraphs (Testing and Start-up): Due to the potential for migration of vapor-phase VOCs into the mass waste sand and gravel unit during implementation of ERH, WESTON recommends that the SVE system for the mass waste sand and gravel unit be installed and functional prior to initiating treatment of the surficial clay till/fill unit. During ERH treatment of the surficial clay till/fill unit and until soil temperatures in the surficial clay till/fill unit return to baseline conditions, the mass waste SVE system should be in operation to capture any vapor-phase VOCs migrating into the more permeable mass waste unit.*

RESPONSE: See Section 4.2.5, page 4-39

Subsection 5.1.6 (Time Frame to Achieve Remedial Objectives)

1. *General: As stated in the above comment, during ERH treatment of the surficial clay till/fill unit and until soil temperatures in the surficial clay till/fill unit return to baseline conditions, the SVE system installed in the mass waste unit should be operating to capture any vapor-phase VOCs that migrate downward into the more permeable mass waste unit.*

   RESPONSE: See Section 4.1.6, page 4-19

Subsection 5.1.8 (Construction QA/QC)

1. *General: A Construction Quality Assurance Plan (CQAP) and Construction Quality Control Plan (CQCP) would typically be prepared for a remediation project of this magnitude. Since preparation of a CQAP and CQCP may cause delays in initiation of the removal action, the substantive requirements of the CQAP and CQCP should be incorporated into Subsection 5.1.8 in lieu of preparing separate plans.*

   RESPONSE: See Section 4.1.8, page 4-21

Subsection 5.2 (Soil Vapor Extraction)

1. *General: Clayton had previously proposed to install a dual-phase SVE system for the site; however, the system present in the LWP is not dual-phase. WESTON recommends that the SVE system installed be a dual-phase system. The relatively high concentrations of TCE near the interface of the mass waste unit and the lower clay/silt unit pose the most imminent threat to groundwater. Use of a dual phase system will allow for collection of impacted groundwater that contacts these contaminated soils. In addition, due to the high levels of TCE observed, it is possible that DNAPL is present at this interface. Use of a dual phase system may facilitate collection of DNAPL, if present.*

   RESPONSE: See Section 4.2, page 4-21

   Based on a review of the boring logs, it appears that the soils surrounding the degreaser pit are predominantly clayey soils, in which SVE will be relatively ineffective. Due to the clayey soils present, WESTON recommends a pilot test for the soil in this area prior to implementation of the remedy to verify that acceptable recovery will occur. Other factors that may detract from the effectiveness of SVE is the presence of structural fill associated with the building foundation and utilities and the uncertain depth of contamination in areas around the degreaser pit. If pilot tests indicate that SVE would be ineffective for this area, WESTON recommends investigation of a more appropriate technology (i.e., excavation, ERH, etc.) for remediation of the soils associated with the vapor degreaser area.

   RESPONSE: See Section 4.7, page 4-61

   It is also unlikely that SVE will be effective in reducing TCE levels in the upper portion of the lower clay/silt unit. WESTON recommends evaluating an alternate technology for remediation of the upper portion of the lower clay/silt unit.

2. *Page 5-17, fourth paragraph: In order to demonstrate completion of remediation, discrete samples should achieve the RAO of 0.06 mg/kg for TCE. Also, the TCE*

breakdown products should be monitored and evaluated. If certain areas do not meet the RAO, remediation in such localized areas may continue.

Subsection 5.2.2 (Feasibility of Implementation)

1. *Page 5-19, second paragraph: The concentrations referenced range up to 51 mg/kg; however, this concentration occurred in the lower clay/silt unit (SB-807, 48 to 50 ft bgs), in which SVE will have limited effect.*

Subsection 5.2.2.1 (Pilot Test)

1. *Page 5-20, third paragraph: Please provide a discussion regarding the electric conductivity (or lack thereof) associated with the stainless-steel wells.*

   RESPONSE: See Section 4.2.3.1, page 4-28

2. *Page 5-22, second paragraph: Where will the vacuum applied to the test well be measured? WESTON recommends measuring the vacuum and flowrates at the both the test wellhead and the blower intake.*

   RESPONSE: See Section 4.2.1.1, page 4-26

3. *Page 5-22, third and fourth paragraphs: It is unclear what "relative organic vapor concentration" refers to. Please revise to better describe this parameter. How will organic vapor concentrations be measured?*

   RESPONSE: See Section 4.2.2.1, page 4-27

Subsection 5.2.1.2 (Degreaser Area)

1. *First sentence: Although existing data indicates that TCE is primarily located up to depths 0 to 6 ft bgs, numerous borings lack sufficient evidence to prove that TCE does not exceed 8.9 mg/kg in soil located up to approximately 14 ft bgs. If alternate sampling is not performed to show that TCE is less than 8.9 mg/kg in the soil located from approximately 6 to 14 ft bgs (as described in comment 4.c. regarding Subsection 4.1.1.), Clayton should assume the interval requires remediation under the scope of this LWP and the remedial system should be designed to treat soil located from 0 to 14 ft bgs in these areas.*

   RESPONSE: See Section 4.7, page 4-61

2. *Third/fourth sentences: Preferential flow paths likely exist in the clayey soil underlying the building in the degreaser pit area; however, over time, preferential flow paths may become sealed and new flow paths formed. In this process, contaminants may become trapped within the clayey soils underlying the building. In addition, other factors such as diffusion may influence contaminant distribution within the soil matrix. Although SVE may be effective in removal of VOCs from the existing preferential flow pathways, SVE would likely be ineffective in recovering VOCs from the former preferential flow paths that have been sealed or from within the clayey soil matrices.*

   RESPONSE: See Section 4.7, page 4-61

Subsection 5.2.3 (Design and Technical Specifications)

1. *Page 5-23, first paragraph of subsection (reference to Figure 5.2-4): Although the figure is a conceptual layout and is subject to revision based on the pilot test results, the figure should be revised to extend the southern header pipe west to MW-522, where TCE was detected at a concentration of 0.81 mg/kg in sand located at 48 to 50 ft bgs. Although sand in this interval is noted as being wet on the boring logs, based on Table 2.1-9 the depth to groundwater in the well typically ranges from approximately 50.5 to 53 ft below the top of casing, indicating that the interval in question is in the smear zone and should be remediated under the scope of the removal action.*

   RESPONSE: See Figure 4.2-1

2. *Page 5-23, second paragraph of subsection: As stated previously, the effectiveness of SVE in remediating the clayey soils present in the degreaser pit is questionable. WESTON recommends that alternate technologies be evaluated for this area; however, if SVE is implemented, the following should be addressed:*

   a. *A pilot test should be performed to determine design parameters and equipment sizes required.*

   b. *The remedial system should be designed to treat soil extending from the lower foundation surface to the underlying soil zone that has been demonstrated (by sample collection) to contain TCE at concentrations below the cleanup standard of 8.9 mg/kg.*

      c. *Regardless of the technology implemented to remediate soil associated with the degreaser pit area, additional sampling should be performed to determine the lateral extent of soil containing TCE at concentrations exceeding 8.9 mg/kg (as described in comment 4.c. regarding Subsection 4.1.1).*

   RESPONSE: See Section 4.7, page 4-61

4. *General: Pressure monitoring probes should be installed within the soil units that are remediated using SVE to ensure that the desired radii of influence are attained.*

Response: See Section 4.2.3.2, page 4-30

Subsection 5.2.4 (System Installation)

1. *Page 5-30, first paragraph of subsection (Vapor and Horizontal Extraction Wells): Drill cuttings and other IDW should be appropriately disposed of off-site.*

   RESPONSE: See Section 4.6.1, page 4-59

2. *Page 5-31, second paragraph: Please describe and provide methodology regarding calculation of breakthrough based on data collected during startup of the system. It seems that this approach would only be appropriate if the air flowrate and contaminant concentrations are constant or continuously monitored over the course of remediation.*

RESPONSE: See Section 4.2.3.10, page 4-35

Subsection 5.2.5 (Operation and Maintenance)

1. *First sentence of subsection: WESTON recommends that a specific minimum time be determined for continuous operation prior to pulsed operation of the system. As stated previously, WESTON recommends that the mass waste SVE system be operated during all ERH activities and until the soil temperatures return to their baseline conditions.*

   RESPONSE: See Section 4.2.5, page 4-39

2. *First sentence of subsection: TCE recovery is based on several parameters, such as the flowrates achieved at each wellhead, the TCE concentrations in the soil near each extraction well, the number of wells online, etc. It is possible that the aggregate TCE recovered may be less than 0.5 pounds per day (lb/day), yet wells installed in highly contaminated soils may still be producing significant levels of TCE. In addition, the system operation should not be adjusted to indicate recovery less than 0.5 lb/day, when actual recovery could be higher under designed operating conditions. Provide rationale used to determine that 0.5 pounds per day is an appropriate cut-off point for continuous operation of the SVE system.*

   RESPONSE: See Section 4.2.3.10, page 4-34

3. *Page 5-32, last sentence of first paragraph: Provide rationale for pulsed operation schedule. It is recommended that the pulsing operation for the SVE be performed such that the blower operation is scaled down from 100% in stages (e.g., operate blower at 75%; after reviewing the data for 75% pulsation decide if the system can be pulsated at 50%; and after reviewing data from 50% pulsating see if system can be pulsated at 25%).*

   RESPONSE: See Section 4.2.5, page 4-39

4. *Page 5-32, second full paragraph: The Operation and Maintenance Manual should be submitted to U.S. EPA for review and comment.*

   RESPONSE: See Section 4.2.5, page 4-40

Subsection 5.2.6 (Time Frame to Achieve Remedial Objectives)

1. *Page 5-32, first paragraph of subsection, fourth sentence: "no significant mass recovery" should be quantified.*

   RESPONSE: See Section 4.2.6, page 4-40

Subsection 5.2.8 (Construction QA/QC)

1. *General: A CQAP and CQCP would typically be prepared for a remediation project of this magnitude. Since preparation of a CQAP and CQCP may cause delays in initiation of the removal action, the substantive requirements of the CQAP and CQCP should be incorporated into Subsection 5.2.8 in lieu of preparing separate plans.*

RESPONSE: See Section 4.2.8, page 4-43

Subsection 5.3 (Water Discharge Monitoring)

1. *General: This section should identify whether discharge is batch or continuous. Monitoring and discharge of water should be in accordance with the wastewater treatment facility requirements. Due to the time frame associated with obtaining discharge permits, this process should be immediately initiated.*

   RESPONSE: See Section 4.2.3.9, page 4-33

Subsection 5.4.1 (Remediation and Air Treatment Systems)

1. *General: The air-monitoring plan for the project should be more aggressive due to the presence of a residential/commercial neighborhood surrounding the site. The ambient air inside the building should be rigorously monitored to ensure that the workers are not exposed to the toxic fumes from the treatment of soil.*

   RESPONSE: See Section 4.5, page 4-54

Subsection 5.4.2 (Ambient Air Monitoring)

1. *Fourth paragraph of subsection (reference to Figure 5.4-1): The southern air monitoring station should be relocated to an onsite location immediately south of the existing parking lot. Also, continuous monitoring at the stack and at the site perimeter should be considered.*

   RESPONSE: See Section 4.5.2, page 4-56

2. *General: As stated previously, due to the proximity of the remediation area to the Lockformer building and since certain treatment system components appear to be located within the Lockformer building, the ambient air monitoring program should be revised to include daily ambient air monitoring inside of the Lockformer building during treatment system operation.*

   RESPONSE: See Section 4.5.2, page 4-56

Subsection 5.5 (Treatment System Installation Derived Wastes)

1. *Page 5-38, last paragraph, fourth line: Insert "and water" following "treatment of the air emissions."*

   RESPONSE: See Section 4.6, page 4-59

Subsection 5.5.2 (Water from Soil Moisture)

1. *General: If a dual-phase SVE system is implemented as recommended, this subsection will require revision to account for perched water recovered from atop the lower clay/silt unit.*

RESPONSE: See Section 4.2.3.9, page 4-32

Subsection 5.5.3 (TCE Vapor Emissions)

1. *First paragraph of subsection: What is the rationale used to determine that 1% of the mass of TCE in the process air will be emitted?*

   RESPONSE: See Section 4.2.3.10, page 4-35

2. *First paragraph of subsection: The meaning of this paragraph is unclear. One may construe that 100% of the TCE removed from the subsurface will be released to the atmosphere. Please revise and clarify.*

   RESPONSE: See Section 4.2.3.10, page 4-34

Subsection 5.5.4 (Used Carbon)

1. *First paragraph, third sentence: Due to the differences in operation of the treatment systems over the course of the removal action and the distribution of TCE in the soil, the TCE loading to the carbon units will vary over the course of the removal action. Please describe how carbon unit replacement over the course of the removal action will be determined.*

   RESPONSE: See Section 4.2.3.10, page 4-35

Figure 5.1-1

1. *Each electrode should be assigned a unique indicator.*

2. *Figure 5.1-1 or a supplemental figure should indicate the layout for the entire system, including plenum, surface runoff controls, location of power supply and blower, horizontal recovery wells, piping and wiring networks, etc.*

   RESPONSE: See Figures 4.1-9 and 4.1-10

Figure 5.2-1

1. *The test well and each pressure monitoring point should be assigned unique identifiers.*

   RESPONSE: Unique identifiers will be assigned once the final design is complete

Figure 5.2-4

1. *Each well should be assigned a unique identifier.*

2. *Figure 5.2-4 should be revised to include an additional extraction well on the west end of the southern header, to remediate soil associated with MW-522.*

2. *Pressure monitoring points (with unique identifiers) should be indicated.*

RESPONSE: Unique identifiers will be assigned once the final design is complete. See Figure 4.2-1

Figure 5.2-7

1. *Figure should be revised to reflect a dual-phase extraction system (i.e., sump, pump, liquid line, etc.).*

3. *Will inline condensate knockouts be placed along horizontal pipes or will all liquid be removed from the airstream via the condensation tanks? If knockouts will be used, they should be indicated on figure.*

RESPONSE: See Figure 4.1-8

SECTION 6.0 (CONFIRMATION SAMPLING)

1. *General: Replace all "RO" and "ROs" references with "RAO" and "RAOs," respectively.*

RESPONSE: Done. See Section 5.0.

2. *Page 6-1, paragraph 2: Confirmation samples should also be collected from the upper portion of the lower clay/silt unit.*

RESPONSE: Done. See Section 5.2.

3. *Page 6-1, paragraphs 3 and 4: More detail is required regarding number of samples per boring (i.e., one sample per 10 ft).*

RESPONSE: Done. See Sections 5.1 and 5.2.

4. *Page 6-1, paragraph 4 and page 6-2, second full paragraph: TCE concentrations in all discrete samples should achieve the RAOs, otherwise continued remediation should be performed for areas associated with samples containing TCE at levels exceeding the RAOs. Also, if an increase in TCE breakdown products is observed, soil remediation should continue until levels of TCE breakdown products are similar to historically reported levels.*

RESPONSE: RAOs will be met for all VOCs.

5. *Page 6-2, last paragraph: Confirmation samples should be collected only after soil temperatures have returned to baseline conditions.*

RESPONSE: Per meeting with USEPA, hot sampling will be allowed. A confirmatory field sampling plan will be developed and presented prior to implementation. See Section 5.0.

6. *General: Since the sampling locations are conceptual at this point in time, a confirmation sampling plan should be submitted for U.S. EPA approval prior to shutdown of the soil remediation systems.*

   RESPONSE: Agreed. See Section 5.0.

6. *General: Samples indicated on Figure 6.0-1 focus on soil within the treatment zone. Confirmation samples for all soil units should also include samples collected outside and/or along the perimeter of the treatment zone.*

   RESPONSE: Will be addressed as part of confirmatory sampling program.

8. *General: A confirmation sampling plan has not been included for the soil associated with the degreaser pit area. The confirmation sampling plan submitted for U.S. EPA approval should include samples collected from this area.*

   RESPONSE: This area will be addressed in confirmatory sampling plan.

Figure 6.0-1

1. *Confirmation samples are not proposed under the Lockformer building. Figure 6.0-1 should be revised to include samples collected under the building.*

3. *Although the sampling plan is conceptual, unique identifiers should be assigned to each boring location.*

   RESPONSE: Figure has been eliminated. See above responses.

GENERAL COMMENTS

1. *During installation of the various treatment systems and investigation of soil at the site, numerous borings will be advanced. All borings should be appropriately abandoned such that subsurface conduits are not created. References to a boring abandonment SOP should be added to the document. In addition, during drilling activities at the site, there is potential to encounter free product. Any free product that is encountered should be reported to U.S. EPA and efforts immediately initiated to recover the product.*

   RESPONSE: See SOP No. 211 provided in Attachment A of the QAPP.

2. *The design of the remedial systems is largely conceptual in nature, as design specifications and technical drawings were not submitted. It is unclear at this time whether these will be provided for review prior to system installation.*

   RESPONSE: Revised drawings submitted. See Section 4.0.

3. *Methods for removal and/or abandonment of the treatment systems and their components should be presented in the LWP.*

   RESPONSE: Plan will be submitted prior to removal/abandonment.

4. *A contingency plan should be prepared to address issues associated with electrocution, vapor releases, etc.*

RESPONSE: Section 4.0 addresses these concerns.

APPENDIX A

The following are technical review comments for Standard Operating Procedures (SOPs) contained in Volume II (Appendix A) of Clayton Group Services, Inc. document titled "Lockformer Work Plan" dated 13 December 2001. Technical review was limited to the following SOPs:

- *SOP 110 – Records, Reports, Field Reporting, Documentation, and Record Retention.*
- *SOP 120 – Borehole Logging and Material Classification.*
- *SOP 200 – Soil Sampling and Rock Sampling.*
- *SOP 211 – Grouting Procedures.*
- *SOP 310 – Air Quality Monitoring.*
- *SOP 320 – Field Measurements.*
- *SOP 330 – Vapor Head space Screening.*
- *SOP 500 – Equipment Decontamination.*
- *SOP 910 – Sample Containers, Preservation, and Holding Times.*
- *SOP 911 – Sample Classification, Storage, Packaging, and Shipment.*
- *SOP 912 – Sample Control and Custody Procedures.*
- *SOP 920 – Field Quality Assurance Samples.*
- *SOP 930 – Control, Calibration, and Maintenance of Measurement and Test Equipment.*

Other SOPs included in Appendix A were not reviewed at this time; however, review of these SOPs can be performed at the request of U.S. EPA. General and specific technical review comments for each SOP reviewed are provided below.

General Comments

The FSP for this project indicates that soil borings will be performed using direct-push technology. This boring and sampling technique is not addressed in any of the provided SOPs. An SOP should be prepared to detail the methods and procedures whereby soil borings will be advanced and soil and groundwater samples may be collected using direct-push equipment.

RESPONSE: See Section 2.2.4 of SOP No. 200, provided in Attachment A of the QAPP.

The FSP indicates that Method 5035 will be utilized for soil sampling; however, it is unclear whether Encore samplers will be utilized or field methanol preservation will be performed. In either case, the SOPs do not adequately address these sampling protocols.

RESPONSE: See Section 2.3.2 of SOP No. 910.

SOP No. 110

2.2.5 Visitor's Log, Part A: WESTON recommends that authorized visitors entering the work zone have appropriate personal protective equipment (PPE), as necessary, such as a hard hat, steel-toe shoes, etc., to be specified in a U.S. EPA approved HASP.

RESPONSE: Revised as requested.

SOP No. 120

2.2 Logging Equipment and Supplies, Soil Sampling and Logging Equipment and Supplies: Other equipment recommended for use would be:

- *Hand penetrometer.*
- *Appropriate environmental monitoring equipment, such as a photo ionization device (PID), as specified in the HASP.*

RESPONSE: Revised as requested.

2.3 Logging and Documentation, Part A: Other recommended information would be:

- *USCS classification.*
- *Sample blows (per foot).*
- *PID reading (ppm).*
- *Soil sample information (number, type, depth, recovery).*

RESPONSE: Revised as requested.

2.3 Logging and Documentation, Part B: Other recommended information would be:

- *Type of core (NX, BX, AQ, etc.).*
- *Rock quality designation (RQD).*

RESPONSE: Revised as requested.

2.4.1 Description of Hierarchy: Other recommended information would include odor.

Attachment 2, Field Classification of Soils, Consistency of Cohesive Soils: WESTON recommends that the "hard" consistency should be denoted as >30 blows per foot.

Attachment 3, Relative Density of Cohesion less Soils, Relative Density of Cohesionless Soils: WESTON recommends that the "very dense" should be denoted as >50 blows per foot.

RESPONSE: Revised as requested.

SOP No. 200

RESPONSE: Each of the comments to SOP No. 200 has been addressed as requested.

2.1 General Requirements, B, 3: Overhead utilities should also be located along with other utilities.

2.2.2 Split-Spoon Sampler, E: WESTON recommends that the liner tubes be correctly labeled with the following information:

- *Depth.*
- *Date.*
- *Sample number.*
- *Project number.*
- *Top and bottom.*
- *Boring number.*

In addition, this SOP does not specify procedures for cases in which an Encore sampler will be used to collect VOC fraction soil samples. The FSP for this project indicates samples will be collected using Method 5035; however, it is unclear whether Encore samplers will be used or methanol preservation will be conducted in the field. In either case, the SOPs do not address these considerations.

2.2.4 Thin-Walled (Shelby) Tube Samplers, C, 2: WESTON recommends that the sample tube be labeled with the following information:

- *Top and bottom.*
- *Boring number.*
- *Project number.*
- *Sample number.*
- *Depth.*
- *Date.*

WESTON also recommends that the sample tube be handled properly during transportation (kept upright, no jarring of sample). Also, correctly pack the tube with material for shipping (ends capped and taped).

2.2.4 Thin-Walled (Shelby) Tube Samplers, G: The SOP should define what comprises "standard practices for geotechnical investigations."

2.2.5 Cuttings or Wash Samples: This is not a recommended method for sampling or logging of soil. It is not very accurate or precise, and should only be considered when other sampling methods fail or are not possible.

2.2.5 Cuttings or Wash Samples, B: If this method is used to log soils, note as such on the boring log.

2.2.6 Test Pit Excavation and Sampling, F: Date and location should also be recorded in the field logbook.

Attachment 1, Material Sampling Form: WESTON recommends that PID readings (ppm) should also be noted on the form, if taken.

SOP No. 330

2.3 Equipment and Materials (ID or PID with calibration kit): Should ID actually be FID? Please revise as appropriate.

RESPONSE: The revision has been completed to FID.

SOP No. 500

2.2.1 Site Selection, B: It is not recommended that decontamination fluids be discarded or discharged into existing pits or lagoons at this site. The recommended strategy would be to store decontamination fluids in storage containers, such as 55-gallon drums or water tanks, followed by characterization, and proper disposal.

RESPONSE: See Section 1.5.6 of the QAPP.

2.4 Sampling Equipment Decontamination Procedures, F: This is not a recommended procedure, especially for delicate equipment, such as water quality meters. Excessive force and pressure caused by this procedure could damage the equipment.

RESPONSE: Revised as requested.

2.6.3 Offsite Disposal, A: Ensure that storage containers are properly sealed and labeled, as required.

RESPONSE: Revised as requested.

SOP No. 910

2.1 General Requirements, B: Is this correct? SOP 930 describes control, calibration, and maintenance of test equipment. Please clarify.

RESPONSE: Revised to reference the Work Plan.

1. *2.1 General Requirements, J: This is not recommended. Some tapes may contain certain chemicals that could contaminate the sample.*

RESPONSE: Revised as requested.

2.3.1 Water Samples, Organics, B: Trip blanks should be preserved with hydrochloric acid (HCl).

RESPONSE: Revised as requested.

SOP No. 911

2.1 General Requirements, D: SOP 930 talks about control, calibration, and maintenance of equipment. Is this correct here? Please clarify.

RESPONSE: Revised to reference Work plan/QAPP requirements.

2.3.4 Glass Containers: It is not recommended that container lids always be taped, as some tapes contain chemicals that could contaminate the sample. Also, it is not recommended that vermiculite be used as a packing material, as some vermiculite contains asbestos. Alternative packing materials (i.e., bubble wrap, cardboard, or shredded paper) are recommended.

RESPONSE: Revised as requested.

2.3.5 Plastic Containers: Caps should not be taped, as some tapes contain chemicals that could contaminate the sample.

RESPONSE: Revised as requested.

2.4.2 Shipping Containers for Unanalyzed Waste Excluding Closed Container Samples, B: Vermiculite is not recommended as a packing material, as some vermiculite contains asbestos. Alternative packaging materials (i.e., bubble wrap, cardboard, or shredded paper) are recommended.

RESPONSE: Revised as requested.

SOP No. 920

2.2.2 Replicate Preparation and Sampling, A & B: WESTON recommends that replicates for soil be taken by putting the soil core(s) in a clean stainless-steel mixing bowl and homogenizing the sample media by mixing thoroughly with a decontaminated or dedicated and disposable implement until its appearance is consistent. The investigative and duplicate samples should then be collected by alternately filling the containers from the homogenized sample media. This protocol ensures that the sample media is homogenous and that the investigative and replicate samples more closely resemble each other. The exception would be for volatile samples, where sample contact with air should be minimized. Additionally, this SOP does not provide for the case in which samples would be collected using Encore samplers under Method 5035, which is indicated in the FSP.

RESPONSE: Revised as requested.

2.2.2 Replicate Preparation and Sampling, E: WESTON recommends that duplicate samples be taken at a frequency of one per 10 samples per matrix, and a minimum of one duplicate sample be collected for each analytical batch.

RESPONSE: See Section 2.2.2 - F of SOP No. 920.

Should you have any questions or require additional information, please feel free to contact me at (847) 918-4000.

Very Truly Yours,

ROY F. WESTON, INC.

Omprakash S. Patel
Senior Project Manager
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

Clayton GROUP SERVICES

January 29, 2001

Mr. Ron St. John
Clayton Group Services
3140 Finlay Rd.
Downers Grove, IL. 60515

Re: Comments on the submittal of the Lockformer Work Plan required under the Unilateral Administrative Order (UAO) Docket No. V-W-02-C-665 issued to Lockformer Company and MET-COIL Systems Corporation.

Dear Mr. St. John,

Please find attached, Roy F. Weston Work Plan and Safety Plan comments, IEPA and Parsons Engineering and the Illinois Attorney Generals comments for the submittal of the Lockformer Work Plan required under the Unilateral Administrative Order, Docket No. V-W-02-C-665 issued by U.S. EPA to Lockformer Company and Met-Coil Systems Corporation. This letter does not constitute an approval of the Work Plan until several major technical issues can be resolved. U.S. EPA will meet with you on January 30, 2001 at 10:00am at your office to explain the comments submitted herein and to attempt to resolve technical issues.

The comments listed in this letter are of general nature and all detailed comments from U.S. EPA have been incorporated in with the attached comments from Weston. In addition, U.S. EPA concurs with the comments submitted by IEPA and their consultant Parsons Engineering and with the comments submitted by the Illinois Attorney General.

***General Comments**:*

Section 1 should state that the work is being conducted pursuant to the Unilateral Administrative Order Docket No. V-W-02-665 issued by U.S. EPA to Lockformer Company and Met-Coil Systems Corporation. The Removal Action Work Plan addresses the Work to be Performed required in the UAO. The following phrase should be inserted into 1.1: "The scope of this work plan is to address activities as required under the Unilateral Administrative Order issued by U.S. EPA and will address the Work to be Performed as required by the Order. Since the current clean-up goals are requirements of the U.S. EPA Emergency Response Branch to address the TCE source material and eliminate the immediate threats posed by conditions at the site, future clean-up of the soil, groundwater and other media may be required under other federal, state or other programs to address constituents and contaminant exposure pathways and sources not addressed under the scope of this Work Plan".

3. *No remediation plan is set forth to treat or collect the contamination found in the upper portion of the lower till. The high concentrations of TCE found in this geological strata presents the highest threat to ground water and delineation and collection or treatment of this strata should be conducted under this removal action*

RESPONSE: See Section 4.3 of Volume I.

4. *The Removal technologies proposed to treat the upper till, Electric Resistive Heating, appears to be appropriate given the site conditions. However, very little detail or engineering diagrams or past performance and corrective measures have been submitted*

in the Work Plan. Clayton committed to providing a visit with the sub-contractor, Thermal, but to date no meeting has been offered. Many questions still remain regarding implementation of the technology, engineering specifications such as wiring diagrams, control panels, electric feeds and electric consumption, diagrams of the vapor recovery system, specifications on the "plenum", Operation and Maintenance Manuals, previous project history and analytical and monitoring of the system to verify that TCE vapor is being removed and not mobilized to another geological strata. See Weston comments (Section 5.0 Remedial Technology Implementation). Prior to any approval of the technology, the vendor Thermal shall be made available for questions and electrical, probe diagrams, plenum, control panels, vapor recovery system, Operation and Maintenance Manuals, contingency plans and health and safety considerations shall be submitted for review. The Removal Work Plan schedule states that U.S. EPA will only comment on the technology during the Work Plan review. The schedule will be changed to include review and approval of the initial pilot test prior to full implementation. In addition, a daily/weekly review of soil gas probes and air monitoring will be conducted with Clayton and Thermal to assess potential migration.

An Operation and Maintenance manual shall be submitted including a monitoring plan to assess vertical and horizontal migration of the TCE, operating parameters, testing, contingency plans for shut down and testing and frequency of sampling need to be addressed. Clayton and Thermal shall provide data and diagrams and pictures form pervious demonstrated clean-up operations and shall provide analytical documentation to verify that no re-bound was identified.

RESPONSE: See Section 4.2.5, page 4-40.

4 *The selection of Soil Vapor Extraction to threat the mass waste unit should be revised to include dual phase extraction which was originally proposed by Lockformer in the previous Draft Work Plan. The dual phase extraction would collect any free phase TCE which may be encountered and will recover the TCE contaminated ground water found in the Waste Mass unit and upper portion of the lower till allowing a more effective remediation of this strata.*

RESPONSE: See Section 4.3, page 4-21

5 *Based on the drilling logs provided, SVE will be relatively ineffective in the Degreaser Pit which is predominantly clayey soils. Other technologies that would be more appropriate in this area would be excavation or thermal resistive heating with soil vapor extraction. If Clayton chooses SVE for this area then they must first conduct a pilot study of this area to show that Removal objectives can be obtained and further delineate the horizontal and vertical extent of contamination in this area prior to approval of this technology for this area.*

RESPONSE: See Section 4.7, page 4-61

6. *Further investigative sampling will be necessary prior to conducting any of the technologies mentioned in the Work Plan. Areas 1 and 2 should be further delineated prior to conducting the proposed Remedial Technology. U.S. EPA will provide a map listing proposed sampling points at the meeting on Wednesday.*

Advancement of three borings along the southwestern portion of the building to verify exceedance of the 8.9kg/mg is necessary in this area. A figure indicating the location of the additional borings, including unique identifiers should be submitted. Additional sampling will be required in the mass waste unit and upper portion of the lower clay to define the extent of contamination.

Additional sampling will be required to further delineate Area 1, 2, and 3. See Weston comments in Section 4.0 General. A map listing proposed sampling locations will be submitted to Clayton at the Wednesday meeting.

Due to the evidence of historical fill being placed in the southern portion of Area 1 three borings should be advanced south of the Lockformer Building. Additional soil sampling will be conducted in Area 2 to define the extent of TCE contamination within the surficial clay till/fill unit, mass waste unit and upper portion of the lower clay that exceed the Removal Action Objectives. Figure 1.3.3 should show original elevations prior to filling.

Historical Drainage Sampling: Clayton shall provide documentation to determine the ground elevation of the Area 1, 2 and 3 prior to Lockformer placing fill on the areas. Historical aerial analysis has shown that these areas have been filled with material soil in the late 70's early 80's. Sample borings collected to delineate the surficial clay till/fill shall be advanced at least 10 feet below the original elevations.

Area 3 will require full delineation to determine the migration pathways for TCE. Specifically in the former drainage basin and historical drainage pathways, grid sampling should be conducted to identify if areas are within the Removal Objectives. See Weston's comments on Section 4.3.1(Area 3 Soil Borings). Two bedrock wells should be installed between CSB-1562 and CSB-1563 and another well located between CSB-1567 and CSB-1568. Each should be installed 50 feet into competent bedrock. In addition, the extent of the shallow zone contamination has yet to be determined and three monitoring wells should be installed south of the Lockformer Property and south the Burlington Northern tracks. These wells should be installed to the top of the bedrock.

Clayton will need to prepare a stand alone QA/QC Plan with attached Standard Operation Procedures (SOPs) which complies with U.S. EPA Removal Quality Objectives. All comments in Weston's letter regarding SOP's should be addressed. In addition, a blind Performance Evaluation Sample should be sent to the selected laboratory for the Volatile Fractions.

A map should be prepared by Clayton to delineate the proposed sampling locations and unique sample identifiers prior to implementation of the sampling plan. The sampling can proceed once the sampling locations and QA/QC plan is approved by U.S. EPA

RESPONSE: These comments have been responded to individually in other Sections.

6 *The Air Monitoring in Section 5 should be re-written to include comments by the Illinois Attorney General, Parsons Engineering and U.S. EPA. The stack on the vapor extraction system shall include a continuous emission monitor with a recording chart to monitor emissions from the unit. In addition, the design on the GAC units shows the units in series. A monitoring plan shall be written to address sampling to monitor break through between the lead and the lag carbon*

vessels and engineering design for four GAC units piped parallel would provide for capture of the vapors once break through is seen in the carbon vessels. The resistive soil heating and vapor extraction system cannot be turned off and these additional carbon vessels will be necessary if break through occurs or during change out of the carbon from the vessels. A weather station and four perimeter air monitors will be necessary to document site perimeter conditions. An air dispersion model should be run to predict maximum ground level concentrations under set conditions. Hourly monitoring or continuous monitoring will be required inside the Lockformer plant to protect workers. Action levels will be determined on site to predict work stoppage. Since the Resistive Soil Heating and Vapor Extraction system cannot be turned off quickly a Contingency Plan must be developed. Bag samples shall be collected and analyzed for all Volatile Organic Compounds to ascertain if any degradation products or other compounds are being removed or released. Ambient monitoring outside the site perimeter near the adjacent neighborhoods to the North, South East and South.

RESPONSE: See Section 4.5, page 4-54

7 *A Construction Quality Assurance Plan and Construction Quality Control Plan for the construction work is not planned. Clayton should meet the substantive requirements of these plans especially considering the proximity to the building, on-going production at the facility, potential settling of soils, conductivity of steel reinforced concrete, underground utilities and worker safety. Diagrams and Schematics for the Electrical Resistive Heating, Soil Vapor Extraction and Air and Water Treatment Systems should be submitted. These diagrams should also show locations of the systems, support zone, parking, base for each area, electrical feeds, underground and overhead piping, and header systems.*

RESPONSE: See Sections 4.1.8 and 4.2.8

8 *Final confirmatory sampling in Areas 1 and 2 should be done after soil temperatures reach baseline. A baseline soil temperature needs to be established. No confirmation sampling is detailed for the degreaser pit. A full plan detailing the operation, sampling and shut down procedures for the soil vapor extraction system should be developed.*

RESPONSE: These comments have been responded to individually in other Sections.

10 *Comments on the Health and Safety Plan are attached to this letter. In addition, U.S. EPA will require a temporary 6-8 foot steel fence around the perimeter of areas 1, 2 and 3 to keep out unauthorized personnel. Since the operations will be running 24 hours it is necessary to have this protective barrier in addition to the fence that will be placed around the thermal resistive heating area. The design of the fence which will be placed around the treatment area shall be detailed to show how it will be kept from being a conductor.*

RESPONSE: These comments have been responded to individually in other Sections.

12. *All drill cuttings and water samples and personnel protective equipment collected from the investigatory work shall be disposed off-site in accordance with the Off-Site rule. The condensate recovered from the vapor extraction system shall be tested and evaluated to see if it can be treated on site and discharged to the sanitary sewer, if in accordance with the districts pre-treatment standards. The water may have to be disposed of off-site. The condensate cannot be land applied as a wetting agent even after treatment.*

RESPONSE: See Section 4.6, page 4-59

U.S. EPA concurs with the attached specific comments and inserts which were prepared by Weston and U.S. EPA. Some sections of the Work Plan will require a re-write while others can be approved with the attached inserts. U.S. EPA is looking forward to meeting with you to discuss these comments. In addition, a meeting with Thermal should be set up immediately so all question can be answered regarding the technology and an order for delivery of the control panel can be made pending U.S. EPA approval of the technology. If you have any questions regarding this letter or the comments they will be addressed at our meeting on Wednesday January 30, 2002 at your office.

Sincerely,

_____

Steven Faryan
U.S. EPA, On-Scene Coordinator

cc *Stan Komperda, IEPA*
Howard Chin, IAG
Om Patel, Weston
Sasa Jazic, Parsons